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PETROLEUM.

A NEW ERA IN PETROLEUM MINING—BORING MACHINERY.

In answer to numerous inquiries in relation to the feasibility of newly invented processes for the sinking of oil wells, we would state that we are not cognizant of either the advantages or disadvantages of any of the new inventions. As yet, the old fashioned drill is the only one in use here. It is stated that no less than sixty inventions have been patented, all intended for the sinking of oil wells. We have as yet seen none of them, or had any opportunity of judging of their respective merits. But as ample preparations are now being made by different companies to test the efficiency of several of these inventions, we shall keep posted upon any experiments that are tried, and give our readers the full benefit of the same.

That the business of oil mining is yet in its infancy, all practical men are willing to admit. But it is not the fashion to dispense with the primitive mode of boring an oil well until some plan, more expeditious and economical presents itself. It is not advisable, then, to count much upon the efficacy of the new inventions until thorough trial is had. But now that the war is over and the Union restored intact, a greater proportion of the inventive genius of the country will be devoted to the petroleum branch of the country's industry. Science and practical skill will soon be brought to bear, and the means both for boring wells and for obtaining the oil from its subterranean depths will be reduced to a purely mechanical demonstration. But a short time will elapse until this is done.

We are among those who entertain the opinion that the petroleum supply is practically inexhaustible.—The stoppage or failure of wells to yield an unbroken, steady supply, can be accounted for in many ways. We have seen tubing of oil wells that became packed so tight with paraffine, that all the power of the gas failed to force the oil through. In such case the parafine had to be removed, which being done, the well was as good as ever. The paraffine we saw taken from the tubing was about of the same con-istency as lard. We think it certainly reasonable to suppose that the crevices in the earth through which the oil is forced, become clogged or stopped up in the same manner as the tubing we have alluded to. Very frequently, in removing the tubing for the purpose of changing the location of the seed bag, which is used to cut off the water, a quantity of gravel and sand is dislodged, and falling to the bottom, has the tendency to materially assist in filling up the crevice or crevices.

But the most frequent reason for the stoppage of wells is that of boring so many wells within a small space of territory. The same disposition exists among oil miners as in the old lady who had the goose that laid the golden egg. We know of several instances wherin parties owning a lease of a single acre, upon which was a good well, concluded to bore another, and by this means have spoiled both wells and rendered them inoperative. In order to fully comprehend our meaning, the reader not conversant with the subject will understand, that the main supply of oil is at the depth of about five hundred feet from the surface of the earth This depth varies in different localities, the parties operating upon Cherry run and the Allegheny river, having generally to sink their wells to the depth of from 600 to 650 feet, before striking the third sandstone, that overlies the largest deposits that have yet been found. In boring a well, frequent water courses beneath the earth's surface are met with. These are seldom found below the depth of 150 to 200 feet. To prevent this water from going down, which would prevent the oil from coming up, as well as to keep the gas from escaping, the seed-bag is used. This is a bag made of stout leather, partially filled with flax seed, tied at both ends around the outside of the tubing.—Upon getting moist, the flax-seed swell, and the bag is caused by the expansion to fit the hole tight, preventing the escape of the gas, and the ingress of water below the seed-bag. Being thus confined, with no mode of escape save through the tubing put in the well, the gas furnishes the motive power to lift the oil to the earth's surface.

It has been the general custom, heretofore, to abandon every well that was unsuccessful, or that failed to meet the expectations of its sanguine owner. These not being tubed or the water cut off, allowed the gas to escape, and water pouring down, forced the oil into other channels. The escape of the gas had the same effect upon the wells adjacent, that a leak in the boiler would have to the working of a steam engine. The number of wells thus abandoned can be numbered by the hundred. It happens, not unfrequently too, that parties will operate in order to stop a productive well, and if successful, inflict great, and often irreparable injury to the interests of perhaps half a score of others, and even then fail to be materially benefitted.

With such an utter waste of the forces that nature designed to play so important a part in the production of petroleum, is it any wonder that large flowing wells are no longer struck? It is rather wonderful to us that any oil at all should be forced to the surface of the earth, save the small quantity lifted by the wheezing ricketty pumping apparatus now used.

The remedy to apply is exceedingly simple, and many companies are applying it as fast as possible. It is to tube these abandoned wells, or rather take a sucker rod, which is the cheapest mode, and by use of the seed bag, shut off the water, and prevent the gas from escaping. By thus closing up four-fifths of the wells the other fifth will prove productive and give a steady yield for an indefinite period. In proof of the efficiency of this plan, we cite the Clapp farm, on Oil Creek. The owners of this farm, Messrs. Plumer & Bissel, commenced tubing the abandoned wells, of which there were a great many on their lands, sometime since, just as fast as they were forfeited. The result has been a perfect success, and the Clapp farm now exhibits an increase in production of over seven hundred per cent.—all owing to the exercise of common prudence. We can cite other instances where the same plan has been in like manner highly successful. As the advantages thus presented are so palpable, it is strange that any well should be allowed to remain in a state calculated to work irreparable injury to the interests of all the parties concerned.

We have thus cited some of the reasons for the stoppage of oil wells and their short lived productiveness Those not conversant with these facts have good cause to be timid in regard to making investments. But the prospect is now more cheering. Those owning oil lands make it obligatory upon the lessees to stop up their wells in case they are abandoned, and also regulate the length of time for which the tubing of any well can be removed. For when the tubing of one well is removed, frequently half a dozen others in the immediate vicinity are flooded, and temporarily if not permanently injured. It is true that the water can be pumped out at great labor and expense, but the loss of the gas, or motive powers, so indispensable to production, is irreparable.

With the help of improved machinery to remedy and apply to causes we have stated, and the exercise of a proper degree of economy in husbanding the forces which nature has supplied to assist us in obtaining one of her most bountiful as well as most useful productions, the supply will certainly be sufficient to meet all the demands that are made upon it. If the loose and careless plan of former years continues, it is very probable that in a short time the petroleum supply will be so insignificant that brokers will become truthful in regard to the prospects of the stock they have for sale, legislative bodies virtuous, (from necessity,) so far as petroleum is concerned, and the assembled wisdom of the nation cease to muddle and embarrass a branch of trade of which they have such limited knowledge. In other words, like the Southern Confederacy, petroleum, as a business, will be "played out."—*Oil City Register*, May 11.

ALLEGED ERRORS IN PETROLEUM PROSPECTING.

Professor C. W. Wright writes to the Louisville Journal:

The formation in which petroleum is found in any considerable quantity in the Mississippi Valley are the sub-carboniferous and Devonian; and, although it frequently issues from fissures in the carboniferous formation immediately above the sub-carboniferous, still it has its origin in the formations below. Serious loss of time and money result from an ignorance of and want of attention to this fact, from the fact that the borings for oil must be made entirely through the carboniferous formation, which in many instances is many hundred feet in thickness, before the oil-yielding strata are reached. If, however, the carboniferous formation is comparatively thin (a fact difficult in many instances to ascertain,) a well may be profitably sunk through it into the strata beneath. Again, failure may result from sinking a well in the Silurian formation, which is below, in geological order, the oil fountains. This formation frequently outcrops in the immediate vicinity of oil regions.

The most remarkable error is that in reference to the origin of petroleum. A writer in a public journal, not many days ago, makes use, in substance, of the following language:

"It is well known that petroleum is the result of the action of heat on bituminous coal or shale." He certainly never submitted bituminous or any other variety of coal to destructive distillation. The oil obtained from coal contains a large amount of ammonia, carbonic acid, and aniline; and, when swallowed, is a corrosive poison. Whereas, petroleum contains but a very small proportion of these substances, and, when swallowed, produces no injurious effect. Beside, coal

oil proper contains many products which are not found in petroleum. Petroleum is easily and cheaply refined. The refinement of coal oil is attended with many difficulties, and is an expensive operation. Again, petroleum in quantity, is below the coal. When heat is applied to a volatile liquid, it tends to escape in the direction of least resistance; which, in the present instance, would be toward the surface of the earth, and not downward, in the direction of the petroleum formations, which would be in that of greatest resistance. The only resemblance between the oil obtained from coal and petroleum, as regards their derivation, is that they are both the products of the decomposition of organic matter.

Another source of error in the search for oil lands is, that of submitting rock supposed to contain oil to the action of fire. Now, a rock charged with petroleum, and one permeated by bituminous matter, will both evolve a combustible matter, which yields a bright light on the application of a high temperature.

Irradescent or rainbow films on the surface of water are another source of error in the search for oil. Films identical in appearance, are produced by the presence of iron, organic matter, and petroleum on the surface of water.

In conclusion, I do not wish to be understood as stating that petroleum is never found in any other formations except the sub carboniferous and Devonian. In foreign countries it has been discovered in other formations in considerable quantities. In the United States, however, the largest yield is found in those formations, and the same remark will apply especially to the oil land of Kentucky.

MINING.

CROSBY & THOMPSONS' GOLD SAVING PROCESS.

This is the result of experiments upon the sulphuret gold bearing ores of Colorado, continued through nearly two years, and a close acquaintance with a great variety of methods used in different countries for working similar ores. These experiments were made in Colorado, upon ores taken from a great number of lodes for the purpose of ascertaining their general constitution, their general quality, the best method for a perfect dry analysis, and the best mechanical application for their manipulation; adhering strictly to the conditions required by analysis. The general constitution of the ores was found to be the same—mainly sulphur and arsenic, combined with metals, iron, copper, lead, silver, gold, &c.; different lodes varying in proportion of the above, and some containing only a part. The general quality of the ores was found to be vastly better than could be inferred from the product obtained by the methods of working them then in use, varying from twenty to two thousand dollars per ton; in fact, we are convinced by the results of our tests, that the sulphurets of any lode in the Rocky Mountain gold field that shows gold in the outcrop or quartz, will yield gold in good paying quantities.

In determining the best method of manipulation for a dry analysis of the ores—we found that gold existed in them in two conditions—native metal and its sulphide, and that the proportion of sulphide to native metal increased as greater depths in mining were reached. This association of the gold with sulphur renders it volatile at a low degree of heat, creating the necessity of condensing the metallic vapors; and to liberate the fine gold absorbed or contained in the iron oxyds, a thorough grinding is needed, also, to fit the metal for amalgamation. The mechanical application is designed to meet all the requirements of a perfect combustion of the ores, a thorough condensation of the ores, a thorough condensation of vaporized metal, and a thorough grinding of the oxyds.

The construction consists of a furnace in which is placed two or three cylinders after the following manner:

A series of two cylinders would be arranged as follows:

A series of three would be arranged thus:

The one placed uppermost is employed as a drying cylinder, and discharges into the lower ones, which are used for burning, and are furnished with large hollow axles that are perforated so as to admit air at all points in its length. At the discharge end of these cylinders is placed a gas chamber to receive the gases, and a trap for the solids to fall through. This gas chamber opens directly into a condenser, so made that the condensed matter is discharged through a trap into wooden grinder, that also receives the burned solids from the trap previously mentioned. The condenser connects directly with the center of a blower that discharges into the chimney of the furnace, creating a draft, so that a short stack only is needed. The material passes from the grinder, prepared in the best possible manner, to an amalgamater that is so constructed as to pass all the gold-bearing matter, in a finely divided state, through the body of the quicksilver, securing contact with its internal surfaces.

The manipulation consists in drenching the pulverized ore, after it has been received from the stamps on to the platform of the feeder, with a strong solution of common salt; it is then conveyed to the drying cylinder where it is dried and heated ready for burning, and discharged from that into the burning cylinders, heated to about 1000 deg. F., where it is entirely desulphurized, the baser metals being oxydized, the gold, &c., made metal, and the sulphur converted into sulphurous acid. The solid products of the combustion are discharged at the bottom of the gas chamber, and conveyed by a carrying apparatus to the wooden grinders The gaseous products are conveyed from the gas chamber into and through a condenser by the action of the blower, where all the condensable gases are condensed and discharged through a trap into the wooden grinders; these reduce the material to the finest kind of pulp and from the elasticity of its grinding surfaces, are able to rub, polish or grind the finest particles, though coarse and hard material may be among them, fitting the material in the best possible manner for amalgamation; from the grinders the material is conveyed to the amalgamator.

Results obtained by the treatment of ores in this way are enormous; there is nothing lost of the precious metal that can be obtained by the best dry analysis. The plentiful supply of oxygen by the perforated hollow axle producing perfect desulphurization, the internal draft made by the blower preventing any escape of vapor, the thorough condensation of all metallic vapors by the condenser, and the presenting of the material thoroughly fitted to perfect amalgamation from the grinders, make this manipulation practically, as well as theoretically, a perfect analysis of pyritous ores in a large or working way.

The same ores that yield ordinarily from ten to twenty dollars per ton by the old methods of work, are made to yield from forty to two hundred dollars per ton, or about ninety per cent. of a good wet assay.

One of the machines of this construction is now at work at the Excelsior Mining Company's mill, at South Boulder, in Colorado, proving by its tremendous results, in capacity and efficiency to be fully equal to the most sanguine expectations of its inventors. Each machine has a capacity equal to the manipulation of ten tons of ore in twenty-four hours. Any man of ordinary intelligence can manage one after a little explanation, and not be bothered with the custody of a tremendous secret. Actual results are the only tests that the inventors wish for themselves or any purchaser to rely upon; they being fully conversant with the working machinery at the mines, introduced with great parade, and the expectations of the mining world raised to the highest key, only to be succeeded by despondency after a little experience had proved their inefficiency, will not urge the adoption of their method by any company, miners or mill-men, until they shall be satisfied by the actual result of regular work. Neither will they seek to obtain fabulous royalties, but fair rates, and satisfaction to the right purchasers, will be made the basis of their sales.

It is no difficult matter to chemically analyze an ore and test for scientific purposes the ingredients, and specify the exact amount of gold there.

So, in a smalll way, are many processes offered which save the gold in a hand experiment, but when attempted in a large and practical way are all utter failures.

This process was perfected on the spot and in a large way, and is offered as a thing that does it—not based on a handful or a few pounds of ore, but by the ton, or cord, as miners contemplate when in the process of mining.

It is observed in the assay of ores, as developed by Colorado mining, that, as a rule, they increase in richness as they sink in depth; and also as they in this way increase in richness by assay, the combination yields with more difficulty to manipulation—that is, while the assay shows relatively more gold, the practical working under the same manipulation often, or generally, shows less; and the inference is, and sufficiently proved to assert it, that the tailings are richer, that is, more of the gold remains unreached by the usual mode of working, and hence the value of any process that meets the difficulty.

This process assumes—and the assertion is demonstrated by the result and phenomena presented in the development of this process—that the gold in the ore is an imponderable or in a vaporized form—that it aggregates or condenses (the latter we like better, though in conflict with the records of chemical science) at a low temperature; that in its normal condition in the ore the gold is not in a metallic form. At any rate, acting on this principle all the gold is obtained.

It is known that it takes 2500 deg. to melt gold—the operation in the "Crosby" process is performed at less than 1000 deg., say about 800.

It is known as a fact that the pyrites containing the gold as it comes out of the mine, or crushed to a fine powder, shows no visible gold, not even by microscopic inspection. We are aware that a piece of ore in the streak of the vein in some of the lodes, supposed to be the result of fire, there may be specimens which conflict with this statement; so, also are specimens frequent in the blossom and elsewhere, where bits of segregated gold can be seen and picked out. Such cases are the result of oxydization, or chemical or igneous action, and really no more conflict with this statement than a retorted lump does—it is the result of action, and is not primordial. We still say, the ore—by which we mean the ore as it is found in its natural condition, be it large or small—shows no gold to sight, (however rich in character,) aided by the microscope. This is not enough to prove its volatile character, but, with other proof, it favors the theory we advance.—*San Francisco Mining Press.*

Coal Washing Machines.—Messrs. Blass & Co., of Barop, near Dortmund, Prussia, in reply to a correspondent of the London Engineer, says:

We are making continually, all sorts of machinery for separating coal and iron ore, etc., according to size and specific gravity. The former end is achieved by passing the materials through drums made of perforated metal sheets, and the latter by washing. Our washing machines are so arranged that the pure coal is taken off from the surface by self-acting simple mechanism, and with a minimum waste of water. The common size washing machine works over and separates 60 bushels of coal about three-eights to an inch and three-quarters in size of pieces per hour, and delivers the clean coals and stones in separate wagons.

Oil.—There are now five hundred and forty-three petroleum companies in existence or in course of formation, with a capital of upwards of $356,000,000.

Michigan now yields about $7,000,000 worth of copper, and $2,000,000 worth of iron annually.

AERIAL NAVIGATION IN EUROPE.

Through long centuries after that early age of fable, when Dædalus flew upon cunning wings of wax and wire, from the unloving shores of Crete, and the blue Icarian sang its solemn requiem to the adventurous boy whose white plumage lay scattered upon its beautiful but treacherous waters, men were content to leave unexplored the mysterious regions of upper air. As the world grew older and Science was born of Observation and Experience, the astronomer with his telescope trod alone with sure steps those unknown seas, and far-off worlds greeted his watching eyes, and spoke to him in a language that Mathematics understood, and interpreted with its unerring fidelity across myriad millions of miles. But until the close of the seventeenth century, no bark had as yet been launched upon the silent seas of atmospheric air.

Most writers upon the origin of aerial navigation have named the end of eighteenth century as the period when the first efforts on aerostation were made, and the names of the brothers Montgolfier have been written as pioneers on the bold road. But this is a mistake. A hundred years before, when Portugal was in the first flush of her independence of the yoke of Spain, and the Duke of Braganza as John IV., had restored to her throne in his own person, the ancient dynasty, an obscure student among the Jesuits was making bold inroads upon the physical sciences, and winning a brilliant rank among the learned men of his country.—Like Galileo, who discovered the laws of the pendulum by watching the oscillation of a lustre beneath a light in a church, and Newton, to whom the fall of an apple revealed the mysteries of gravitation, the young savant must have been a patient and curious observer. It was a soap bubble that first suggested to Guzmao the idea of a balloon, and as he watched the frail and glittering globe floating upon the air, the desire arose to produce, by scientific means, a similar buoyant body. The idea became an all absorbing passion with the young man. Forsaking his legitimate studies, he devoted himself to the accomplishment of this new and fascinating design. He perfected his invention slowly, producing, though not till years of alternate success and disappointment had increased, rather than checked his first enthusiasm, a true balloon. A discovery so great could not long be kept secret, and a royal command soon summoned Guzmao to the capitol. He went to Lisbon, and rose in his balloon before the royal family, the court, and an immense crowd of spectators.—But the ascension was a failure. Guzmao only reached the cornice of the palace, when his machine was disarranged by an unlucky movement, the gas escaped through a small orifice, and the adventurer descended abruptly to the ground.

Still the principle was discovered; it remained only to make with greater care, and aided by his new experience, a second trial. This was, however, prevented by an unexpected circumstance. The newly founded order of the Jesuits had been admitted in Portugal in the beginning of the 16th century, by John III, and the Inquisition in that country established by the same king. Regarding all innovations as dangerous, this body looked with suspicion upon the marvellous discovery of Guzmao, whether apprehensive that, like another Prometheus, he would succeed in bringing down fire from heaven in his car to consume them; or fearing the result to their power, in an investigation of the realms above them, does not appear. It is, however certain that they excited the populace against Guzmao and that the flying man, as they derisively called him, was obliged to leave his native country, to escape the persecutions and jealousies which his enterprising genius had aroused. He died in exile, in 1724, having prosecuted his studies no farther, and bequeathing the secret, of which he alone was master, to none of his contemporaries.

The history of the unfortunate Guzmao appears to have been unknown in France until the later years of the last century, and certainly exerted no influence upon the researches of the brothers Montgolfier, two Frenchmen, who, after repeated trials and discouragements, sent up at last, in 1783, from Annonay, a balloon, the first spectacle of the kind ever enjoyed by the curious and excited public of France. The Montgolfiere, as this father of all French balloons was called, was a globe of varnished silk and paper, with an opening in the lower part, from which was a wire basket, containing the combustible material, cut straw or paper, which made the ascending power of the balloon, which, inflated with hot air, so much lighter than cold, rose readily to a considerable height. This trial excited the greatest interest throughout all France, and a subscription was at once set on foot in Paris to defray the expenses of a second ascension, which was to be superintended by Charles, a celebrated scientific man of the time. Professor Charles conceived the idea of substituting for the heated air used by the Montgolfiers, hydrogen gas, which had been discovered several years before by Cavendish, and is the lightest of all known substances. Being fourteen times lighter than the atmospheric air, this gas in equal quantity, gave the balloon a much more powerful ascending force.—The people followed the progress of this work with inexpressible enthusiasm, and were present in crowds at the departure of balloons, to which, however no one had yet ventured to confide a human life. Some months later, Pilatre de Rozier, and the Marquis d' Arlandes made the first aerial voyage in a balloon inflated with heated air. These adventurous men had soon many imitators, in spite of numerous accidents, of which, the first victim was de Rozier himself.

It had been the belief of scientific men from the beginning, that balloons would be of incalculable advantage to meteorology, throwing open to observation, the high and hitherto unattainable regions of the atmosphere. The variations of temperature, the oscillations of the magnetic needle, the force and direction of currents of air, would no longer be topics for speculation, but themes encompassed by facts, and explainable by actual observation. The mystery of the formation of storm clouds, of hail, and the meteors that terrified men in the dark ages, as they flashed in all their wonderful splendor over the heavens, would be no longer a mystery, but an "open secret," to be read by every earnest student: while in times of war, aerial reconnoissances might be made over besieged cities, and an enemy's plans be read from the clouds, as no deserting traitor could report them. But when Prof. Charles took charge of these first balloons, aeronauts had too little experience in their art to attempt any meteorological observations; only trial voyages were as yet undertaken by curiosity. The first truly scientific ascension was made in 1784 by Boullon, but owing to the incompleteness of his preparations it was unsuccessful. In 1804, Gay Lussac and Biot rose together, and with such satisfactory results, that a month after, Lussac made alone, a second ascension to a height of 21,000 feet, and brought back in tubes, specimens of the atmospheric air, which he submitted in his laboratory, to a chemical analysis. In 1806, Carlo Broschi, royal astronomer at Naples, attempting, like the young Icarius to rise higher than his predecessor, was suddenly arrested in his heavenward flight by the bursting of his too densely inflated balloon; a remnant of gas remaining, however, permitted him to descend in safety.

From this time, for many years, balloons were only used at public fetes, where men, scorning the secure little willow car, and eager for notoriety, ascended the skies on horseback, like heroes of fable. Since 1784, Charles had used the valve to facilitate his descents, and had carried ballast. In our time, nothing has been changed except the substitution of a more economical gas for hydrogen, and the ability of aeronauts to regulate with more security, the dangerous operations of departure and ascent.

Unfortunately, it is rare to find united in the same person, the qualities that alone can promise success to a scientific investigation. The intrepidity and coolness of the aeronaut must be united to the experience and knowledge of the scientific student. Nevertheless, so perfect have instruments been made, that even observations of importance may be taken by the least instructed aeronaut. In place of thermometers and barometers, whose movements can be understood only by a skillful experimenter, Regnault has constructed an apparatus, by which any traveller, however he may be distracted by the novelty of his position, or the management of his balloon, may take observations by the mere turning of a screw, that the savant can interpret in his laboratory afterward. The expenses of a scientific ascension are so considerable, that they are generally defrayed by an association. In England, the Royal Society of London has rendered efficient aid to aerial studies, and under its auspices, Mr. Welsh made several important ascensions in 1852. Giving his principal attention to the variation of the temperature, he discovered that up to a certain elevation, the mercury fell in proportion to the height from the surface of the earth. At that point, the decrease in temperature was arrested, and for about 1,800 feet the mercury remained stationary, when the cold finally began a regular increase, though less rapid, than nearer the earth.

But perhaps the most interesting ascensions of the age were made in 1850. It was determined to rise to the highest possible elevation, and to study with perfected instruments, a number of imperfectly comprehended phenomena. To determine by what law the temperature is diminished, as distance from the earth is increased; to observe the changes and gradual loss of humidity in the air—to decide if the chemical composition of the atmosphere is the same at all altitudes, if the proportion of carbonic acid varies, and to compare the calorific effects of the solar rays with the same effects produced on the surface of the earth; these were the questions that engaged our adventurers—questions of not purely theoretic interest, as the information thus acquired would be of importance to aid astronomical observations, and especially the calculation of refractions, interesting alike to astronomers and navigators.

In spite of the cold, the unfavorable state of the atmosphere, and some unavoidable accidents, the results of these two experiments were not without success.—The balloon traversed a cloud composed of shining arrows or needles of ice, which hung in the air, in opposition to the apparent laws of gravitation, one of the most curious facts proved by modern science. The travellers saw, glittering below the horizon, the reflected image of the sun, which was formed by the reflection of luminous rays upon the horizontal faces of these icy crystals, which floated in a foggy atmosphere.—They remarked also, an extraordinary fall of temperature. Gay Lussac, who made his second ascension on a slightly misty day, found, at about the same height, the fall of mercury in his thermometer was only to 90 deg. below zero. The same temperature was found this time at an elevation of 18,000 feet; but leaving this point for one 1,800 feet distant, without transition of height, the mercury fell at once to 39 deg. below zero. Until this time it had been the general belief that the temperature of the atmosphere increased and decreased regularly at the rate of one degree for every 600 feet, but this theory could now no longer be admitted. It appears certain that there are in the high regions, clouds of cold, vast spaces subject to exceptional laws, and it is easy to believe that they play important parts in meteorological phenomena, and influence strongly the climate of the countries over which they float.

A long interruption in aerostatic experiments ensued, until 1861, when the association of Great Britain for the promotion of the sciences, appointed a committee to direct balloon expeditions, voted the necessary funds, and fortunately found a philosopher who was disposed to brave the perils of the investigations. This was the director of the meteorological department of the Observatory of Greenwich, Mr. Glaisher, who was assisted by his son, a boy of fourteen years, several officers of the British army, and especially by Mr. Henry Coxwell, a skillful aeronaut, who during 20 years made 500 ascensions. The next year, Messrs. Glaisher and Coxwell ascended alone. Having arrived at an altitude of 26,000 feet, the thermometer being 24 deg. below zero, Mr. Glaisher began to lose consciousness; the light became obscure to him; he could

no longer read the reports of the barometer, and soon was groping in utter darkness under the full glare of a noonday sun. The cold and extreme rarefaction of the air had exhausted him. Still, the balloon ascended, when Coxwell, who was seated above at the valves, grew partially unconscious in his turn. He lost the use of his hands, which were icy and almost black. It is estimated, though perhaps with some exaggeration, that they had reached a height of 33,000 feet. Pigeons, released by them in this rarefied air, fell like stones, their wings too feeble to sustain them in the almost imperceptible atmosphere. They were like travellers lost in an unknown and fearful desert, a mysterious space, almost destitute of moisture, air or heat, where even the clouds could no longer sustain themselves, and the voice of man was entirely inaudible.

From all these expeditions have resulted observations which, without resolving completely the problems relative to our atmosphere, at least throw much light on many hitherto disputed points. Thus it appears certain that the thermometer always falls rapidly until the clouds are reached; then layers of clouds more or less warm, and from 900 to 9,000 feet in thickness, are traversed. These are doubtless atmospheric currents, which come from the south, and exercise a controlling influence upon climate. During the first 15,000 feet, or until the moment when the upper surface of the cloudy belt is reached, the succession of temperature is variable, and by no means conforms to old theories. Once above the clouds, the temperature diminishes perhaps indefinitely, until the planetary spaces are attained, where a cold, which we cannot conceive, reigns supreme. The rays of the sun traverse these icy regions, but leave no cheering trace,—The eye and thought alone can penetrate those far blue depths, from which human life is forever excluded, and on whose misty shores science must forever linger unsatisfied.

"Omnia possideet; non possidet aera Minos."

It is perhaps worthy of remark that while the heavy murmur of London was heard distinctly by Mr. Glaisher at the height of 6,000 feet, the shouts of several thousand people were inaudible at 4,500 feet. The barking of a dog penetrates the air to an elevation of 9,000 feet, while the whistle of a locomotive is heard until the unknown realms of space are reached. The physiological effects of the rarefied air are as dissimilar as the temperaments of travellers—with some the pulsations of the heart become more rapid and violent, with others they are slow and scarcely perceptible.

Mr. Glaisher endeavored to use his experience in aerial navigation for the benefit of military science, but the changeable climate of England proved unfavorable to his investigations, and the effort was relinquished. It is probable that only over the great plains of a continent like our own or Europe, will be found that steadiness among the elements which will permit the laws that govern the atmospheric currents, to be recognized with any degree of clearness or success.

When the Montgolfiers had produced their marvellous discoveries, and all France was excited with the novelty and ingenuity of the invention, some one asked Franklin, who was then our minister to the court at Versailles, of what use were balloons. "Of what use," was the sententious reply, "is the new born child?"—These words of a man of genius, whom more than one inventor strove to engage in favor of his idea, have been already justified even by the slight service the balloon has hitherto rendered the cause of Science.

In 1850, when aerial expeditions were popular and encouraged by numerous sympathizers, the efforts of the inventors, which had hitherto been devoted exclusively to the discovery of the most successful ascending power, were turned to a new field. To direct the balloon was the problem they now strove to solve. So great was the interest excited by the new topic, that the Academy of Sciences in Paris received, during a single year, no less than twenty-one treatises upon aerial navigation. In what the merits of this score of projects may have consisted, we are likely to remain in ignorance, as M. Arago, the Secretary of the Academy, limited himself in his report, with an easily comprehensible scorn, to a list of the names of the authors, and the end proposed by each, farther advising all serious men to abandon a subject he deemed chimerical and which had already been exhausted by Meusnier, a member of the Academy of Sciences, who had devoted ten years of his life to the study of aerostation, and had brought to the subject a zeal, a penetration and a scholarship which had almost elevated it to the rank of a Science. Meusnier was an officer in the army, and in 1793 was appointed general of the army of the Rhine, and killed at the siege of Mayence. So great was the respect paid his genius by the Prussians, that a cessation of hostilities took place until he was buried. One of the dreams of this remarkable man was a magnificent ellipsoidal balloon, 261 feet by 129 feet, destined to carry thirty men with provisions for sixty days. M. Marey-Monge in his Etudes sur l'aerostation, devotes some psges to the enormity of this work. It was the idea of Meusnier to imitate the swimming bladder of a fish, which may be contracted or expanded at pleasure, thus diminishing or increasing its weight. But this result would be difficult to attain in a less dense medium like the atmosphere. Meusnier gave to his balloon a double envelope and forced air into the space between, by means of a pump placed in the car below. No experiment was ever made, however, with the new apparatus, which was unwieldy, and the result would have been unsatisfactory. Nor was this the only project presented to the public. Others conceived the idea of balloons upon wheels with broad paddles which were to beat the air like the wings of a bird. In 1847, Dr. Van Hecke submitted to the Academy of Sciences a plan of this kind in which he made use of the screw, since employed in our propellors. The impracticability of these ideas seems startling, and yet there are not wanting men of culture and intelligence who maintain the contrary. But where is the motive power for screw, or oar, or paddle? And what efficacious means have been discovered to perform the most important of all aeronautic feats, ascent and descent at will? As the boat descends with the stream, so will the balloon ride upon the strong current of upper air, but what power is to guide it against the tide?

For how many hundreds of weary years, men sailed over the seas, ignorant of the winds and currents which retarded or accelerated their progress, and what an era was that in the history of navigation when the existence of periodical winds become known, and monsoons and trade-winds no longer stole upon unprepared mariners: ships went securely from the Cape of Good Hope in summer to Bengal and returned in the winter, avoiding the stormy season of the Equinox, when the two opposing monsoons meet in such long and violent conflict. It required a longer time to learn that the Equatorial region enjoyed an almost perpetual calm, and that the sailor who wished to avoid being becalmed in those latitudes must cross the line almost perpendicularly. In our own times the broad roads of mid ocean are as clearly defined to the eye of the skillful navigator as the orbit of a planet to the astronomer.—Winds and currents, so long the tyrants of the ignorant are in the hands of Science only accessories to the great designs of man.

The more modern advocates of aerial navigation are suspicious, and justly, of the varied machinery proposed by ambitious inventors to facilitate the passage of the balloon through the invisible ocean of atmospheric air, and uphold that the wind is the best and only reliable motive power. They maintain that the winds upon shore are not less constant and reliable than those that reign above the sea, although this is generally asserted by their opponents, the imaginative champions of the steam engine. The lower currents of air are indeed diverted from their course by long ranges of lofty mountains, and miles upon miles of dense forests, but rising higher, it is generally conceded that regular currents may be found uniform with those of the same altitude above the sea, and only varying with the seasons. It is a well known fact that the aeronauts who ascend from Paris are invariably carried to the northeast, thus proving the existence of a regular current from the south-west. A returning current must necessarily exist at a greater height. The aerial navigator must then traverse rapidly the first zone of the atmosphere where the variable winds reign, and rise to the first or second current, as his wish may be. So strong has been the faith of some aeronauts in the existence of these regular currents that they have trusted themselves to their guidance upon the open sea. In November, 1836, Mr. Green, with two friends, ascended from London, crossed the North sea during the night, and landed at Coblentz the next morning, having been eighteen hours en route. He travelled in the lower or inferior current. The balloon, which was sent up from Paris on the occasion of the coronation of Napoleon I., and descended in Lake Bracciano, in Italy, probably rose to the superior current, having no weight to carry. An ascension is also on record, where the aeronaut was alternately carried by the two adverse currents. In 1822, a Mr. Robertson ascended from Lisbon, rode to the southeast, and had already crossed the Tagus, when he observed that the clouds above him were carried violently in the opposite direction. He instantly discharged ballast, attained the desired height, and, returning, descended near the place whence he had arisen, and in view of the same crowd who had cheered him upon his departure.

It may however, be objected that the superior current may be at a height so great as to defy the power of the balloon to attain it. The carburet of hydrogen, generally used in inflation, gives but a feeble ascending force, its density being but 98 to 100 of common air.—On account of its feeble density, hydrogen is preferable to all other gases, though on account of its extreme fluidity, it filters more quickly than any other through the tissue of the balloon. When ingenious aeronauts have learned to make balloons impervious to gas, a consummation long devoutly wished will have been attained. There is no known substance entirely impervious to gas, which can be used in the manufacture of balloons: even skins are permeable. Successive layers of paper would have the advantage of cheapness, lightness and impermeability, but would be quite useless on account of their extreme sensitiveness to moisture. Some have proposed the use of thin plates of metal, and in reality the gasometers in which gas is preserved in cities, are true balloons, but it is evident that their weight would be a very sensible inconvenience in aerial navigation: leaves of copper and tin are prepared, but are unhappily too fragile and brittle to answer the end in view. Until this substance shall be discovered, protracted voyages in the air will be impracticable. When that happy day shall have arrived, wonderful are the promises of French aeronauts. Balloons are to be constructed in the shape of birds or ships or the cylindro-conical balls used in modern warfare. These are to walk the air like things of life.—Balloons bristling with lightning-rods and connected with the earth, are to float gracefully in the blue ether, gathering the destructive electric fluid from the very bosoms of the thunder-clouds, and transmitting it in safety to the earth. Seducing Utopia! when every city, village and manufactory will be a sea port, and canals and railroads useless. Vessels, if they still exist, surprised by tempests, will be raised by the turning of some mysterious screw, into the clouds above the storms and transported over inconvenient isthmuses and ranges of mountains. Wars will be carried on by dropping bumb-shells from the sky into the midst of hostile armies, or there will be no wars, for lands, though intersected by narrow friths, will be connected by hourly lines of balloons and cannot abhor each other. Still let us not expect that man will fly like an eagle in this century. To day the most skillful aeronaut cannot preserve his ascending power more than forty-eight hours: his vertical movements are made at the expense of his freight, his horizontal ones at the will of the wind. We are as far from the solution of the question as Guzmao or Montgolfier.

Swift tells us that in Lupata a traveller saw above him an island, whose inhabitants had the art of raising and lowering it at pleasure. He had the honor of being received into this sailing garden, and was per-

mitted to examine the mechanism that gave it its strange power. Unhappily but an insufficient description is given of this marvellous machinery, and mankind must regret the carelessness of the traveller who neglected so grievously the manifest interests of science, leaving, however, to scientific men the encouraging information that the miraculous island was inhabited only by mathematicians and philosophers. *Sapienz dominabitur astris.—Amer. Ex. and Review.*

MICROSCOPIC LIFE.

Shall we consider the universe more wonderful from its vastness, or its array of the minute? Shall we consider the far off orb whose light is thousands of years in traversing the space which separates it from our vision, a more impressive phenomenon than the monad, five hundred millions of which may exist in a drop of water? Shall we consider the revelations of the telescope of the immeasurably great, more glorious evidence of the divine order, than those of the microscope of the immeasurably little? The terms great and small, in this world we inhabit, are indeed relative, and we grievously err in considering that positively little which seems so to our relative forms of perception.

Under the highest magnifying power of the microscope we still perceive organized beings possessed of life. We find them everywhere, in our bodies, our food, our water, our flowers, in our gardens, in the air we breathe, in snow and in ice. "In vain," says Bory St. Vincent, "has matter been considered as eminently brute, without life. Many observations prove, that if it is not all active by its very nature, a part of it is essentially so, and the presence of this, operating according to certain laws, is able to produce life in an agglomeration of the molecutes: and since these laws will always be imperfectly known, it will, at least, be rash to maintain that an infinite intelligence did not impose them, since they are manifested by their results."

Ehrenberg found a few species of infusoria in the subterranean water of mines; he met with several in some silver mines in Russia, at the depth of fifty-six fathoms below the surface; but he never detected them in atmospheric water, such as dew. He also discovered that the yellow dryfog—which has often been attributed to the tails of comets, and so alluded to by Humboldt and Arago—observed from time to time advancing from the Cape Verd islands towards the east, covering parts of north Africa, Italy and central Europe, is composed of myriads of silicious animalculæ, carried away by the trade winds. Similar animalculæ have been found in fixed or floating icebergs at 12° north latitude, while numerous forms of the same group have been detected in hot mineral springs.

If a few flower stalks or a handful of green leaves be placed in a glass of water, and allowed to remain there from two to four days, exposed to the air, and to the light, at the end of that time the water will have assumed a green, or brownish green tinge, and on being submitted to examination under the microscope, will be found to swarm with many descriptions of infusoria. How did they come there? Some say their eggs, or "buds," are constantly present in the air, driven about everywhere by the wind, and develop themselves whenever they happen to fall upon an appropriate medium, such as putrifying vegetable substance. Others say that the eggs form spontaneously in water containing vegetable matter, as the eggs of other animals in the womb.

Naturalists, such as Lamarck, Oken, Geoffrey St. Hilaire, Darwin, and others, consider certain Infusoria (*Monades*) as the fundamental organic substance, from all higher organisms have been progressively developed. Nature created *Monades*, the most simple form of infusoria, from the gradual perfection of which, through myriads of centuries, and amidst all kinds of physical changes, all the higher classes of animals have been produced. On such points, while we may persistently investigate, we may reserve our judgment.

The *Monad*, the simplest form of infusorial life, consists of a fine pellucid membrane; it forms a very minute sphere or cell, having a few green or colored spots in its interior. It requires to be magnified 640 times to be seen at all. Some authors say it varies from 1-24,000 to 1-500th of an inch in size, according to the species. According to Humboldt, the true monad never exceeds 1-3000th of a line in diameter. It effects its locomotion by means of *cilia*, fine hair-like processes which cover the whole surface of the body, and which are constantly vibrating.

Some of the infusorial animalculæ secrete a covering of hard flint; so that the covering of infusoria is of two kinds: the one soft and apparently membraneous; the other rigid and hard, having the appearance of a shell, though from its flexibility and transparent nature, it is more like horn. The microscopic beings belonging to the class of *Rhizopoda* —a class higher than infusoria—present also the latter peculiarity. This hard covering consists sometimes of silica, and sometimes of carbonate of lime. To it we owe the preservation of infusoria and foraminifera which have lain for centuries upon centuries in a fossil state, in the strata of the earth. It has been calculated that eight million individuals of *Monas crepusculum* can exist within the space that would be occupied by a grain of mustard seed, the diameter of which does not exceed one-tenth of an inch. The rapid and mysterious transition of color which is observable in lakes, and which has often created alarm in the minds of the superstitious, has been attributed to infusoria. A lake of clear transparent water will assume, for instance, a green color in the course of the day, it will become turbid or mud-colored about noon, when the sun brings the infusoria to the surface, rapidly develops them, and where they die by millions before night. Microscopic vegetables may produce similar results. Infusoria and rhizopoda play an important part in the phosphorescence of the sea. The luminosity of the waves is supposed to be entirely due to them.

Fossel infusoria have been detected in great numbers. They were first discovered in certain silicious deposits, near Berlin, but have been since recognized in all parts of the world. The silicious and imperishable envelope, before alluded to, enables them to be minutely investigated. These shell-like integuments, visible only under the microscope, constitute masses of white powder, known as *mountain meal*, (*berg mehl*, German; *farine de montagne*, French.) In Swedish Lapland, under a bed of decayed moss, is found an immense stratum of this substance. Chemical analysis shows it to be composed of 22 and 0.15 of oxide of iron. These fossil infusoria do not of themselves constitute an aliment of sufficient nutriment to sustain life; but in China, where "mountain meal" abounds in some districts, it is made use of to mix with other food. Infusorial earth has been found in America at West Point, and in different localities in New England. Some of the deposits are 15 feet in thickness. Richmond, Virginia, reposes on a bed composed almost entirely of such earth.

The city of Berlin is built upon such a deposit consisting of microscopic animals and plants, some of which are still living, and propagate daily, with great rapidity. Their existence is doubtless maintained by the waters of the Spree, situated on a higher level, and which filter through the deposit. It is feared that a period will arrive when a portion of the town will fall in, on account of the rapid development of these creatures, some of which, according to Ehrenberg, form in the space of four days, no less than two cubic feet of new movable earth.

The polished slate of Bilin in Prussia, which is used for polishing metals, glass, marble, &c., is entirely composed of the silicious shells of infusoria and other animalculæ, and forms a stratum 14 feet thick. One cubic inch of this polished earth has been shown by accurate measuremeut and calculation, to contain forty-one millions individuals of *gallionela distans*, and 1,750,000,000 of *gallionella ferruginea*.

The material chalk appears to owe its origin in great part, to remains of myriads of animalculæ, principally *foraminifera*. They secrete a calcareous shell or covering, similar to that of the silicious infusoria.

The calcareous bed of the tertiary formations, known as nummulite limestone, is an interesting study, on account of the enormous quantity of nummulite shells—larger foraminifera—which it contains. This limestone can be traced from the Pyrenees, through the Alps and Appenines, into Asia Minor, and further, through northern Africa and Egypt, into Arabia, Persia, and northern India. A similar deposit occurs in the Paris tertiary basin, and in that of Brussels. The fine-grained, and easily worked limestone, which affords such an excellent material for the decorated buildings of the French capitol, is almost entirely formed of accumulated masses of the minute shells of foraminiferous animalculæ. In this nummulite limestone, the matrix in which the nummulites are imbedded, is itself composed of the more minute foraminifera, and of the broken and cemented fragments of the larger species.—*American Exchange and Review.*

MODERN MEANS OF INFORMATION.

It may be worth the while to pause a moment and contrast the present means of information with the restrictions that curbed the human mind within the lapse of a comparatively short period. Who will look over the library of some antiquarian, will detect a corpulent compilation of leaves which are fashioned of parchment and the chirography painfully coursed by the human hand.

During the middle ages, the learning of Europe was almost entirely confined to the denizens of the monasteries. With the arrogance of ignorance, the proud lordlings would superciliously summon the shaven priest to their presence when the necessity arose for the transmission of some written message. A military adventure or the song of some errant minstrel, were the only means of knowledge of lands beyond their own. Of the great Past, with its throbs of enterprise and glory, men and women knew nothing save from hazy legend. The intellect was torpid, and greed, and revenge, and tyranny, and lust were the controlless passions. It is a matter of wonderment, the topics of conversation in palace or bower in those dark and untutored days. The mental gloom was Cimmerian. Beneath the belted warrior and the courtly dame, the great masses were serfs, whose possessions and lives were at the beck of their self-constituted superiors.

We wot there has been some change since that gloomy period. To be sure the Arcadian vision of old dreamers has not been realized; for there are poverty, crime and remorse in the most favorable sections. Yet in civilized lands at the present moment there is no attitude or phase of the human family that excludes any character of information. Learning, however abstruse and complicated, is forced upon every comprehension, however reluctant. Say, if you please, there are regions where

adults have been unable to secure a knowledge of their written tongue. The interfusion and contact of their intelligent fellows force upon them the accretions of their superiors. There is not a sane man in the United States who has not pretty accurate knowledge of planetary movements, and the laws of tides and seasons. He knows much of the geography of the earth, and the habits of and manners and government theories of all nations.

The printed sheet is accessible and penetrable as the atmosphere. Very widely diffused is the modern gazette—become as much a necessity to the humblest and forlorn as the morning meal—and how diversified are its teachings? It has literary breathings from the most polished of every land. It utters every matter of scientific research. It gives the reverberation of distant wars, and the quarrels and amenities of the potentates of the earth. It engorges us with the past, with its deeds of daring and crime. It reveals the present as if by the unfolding of a scroll. Through its columns the electric wire pulsates, obliterating space, communicating the most distant event the moment of its transpiration.

The press has become to the people of our generation as was Mephistopheles to the German Faust, conveying all manner and variety of wisdom. It multiplies volumes with greater rapidity than the ephemeral insects their brood of myriads. So far as the dissemination of learning and fact is concerned, it is no harm to be plunged in the gulf of penury. Information is upon the wings of each breeze. It has no cloister now. Front de Bœuf, had he lived and rioted and oppressed in our day, could have found a "clerk" to pen his missile in the first ragged urgin in his pathway.

THE MIRACLE OF NATURE.

We shudder when we look on a corpse, inanimate and still, and involuntarily we ask, is it all ours? Can a bright immortal be evolved from such a wreck? My friend is dead! I stand by his corpse. Yesterday he was with me. Brilliant thoughts awoke to the confines of his now dissolving brain, scintillating like gleams of light. Yesterday he solved difficult problems in mathematics and intricate judicial questions. He expressed emotions worldwide in their being. I saw his children on his knees, and they met in those eyes the glance of love, the smile of affection—those eyes now glazed and sightless. I stand tottering on the dreadful brink of eternity; I have approached the awful precipice where life's cord is broken, and beyond—ah! hush my soul!—beyond! Mortal eye sees not a step further—mortal ear hears no echoing sound of the arrest of the mortal precipitated over that brink! Before us lies a wreck. The heart capable of making three thousand million beats without stopping—has at last paused forever—capable of universal thought and Godlike energy of execution, is now silent. To-morrow, brain, heart, all this mortal stature, like marble ground to powder, will be scattered over the world by the winds, and a million hungry beings will make those atoms their own! Is there a resurrection!

Nature each year demonstrates the resurrection in the revolving seasons.

It is winter, and animate nature is dead. Earth and water are changed to a crystalline rock. There is no rain, only frost—the congealed damp on the brow of this corpse—show the burial garment of vitality. Look you out on the frosty landscape; there is a pitting wind and the leaflets are swayed like hoary skeletons moved in mockery of life. The sap in their veins is stone. A few animals, protected by the forethought of man; and man himself, by superior wisdom and the control it gives him of the elements survive.

Look out on the frozen world, and say if anything were more completely dead! There is nothing active but the wind, and that seems the infernal breath blown from an unknown source, by which nature was destroyed.

If to this scene we add one element—heat—everything abounds into life; the shroud vanishes; the stream dances down the meadow, bordered with green and bright flowers; the trees clothe themselves in emerald; birds carol in the branches; the little lumps of stone turn into insects and reptiles, chirping in the foliage or bathing in the sunshine, Suddenly there is a resurrection of life in exuberance of terms, and plenitude of power.

Each year we have seen this miracle of the seasons greater by far, than the resurrection of the spiritual from the immortal.—*American Union.*

THE MARIPOSA ESTATE.

This estate, which in the hands of a prudent manager would be a princely fortune, appears to have become, in reality, a beggarly concern, not paying even its own expenses. This want of success is doubtless due to a lack of judgment, coupled with individual speculation in its management. The company, despairing of being able to have it worked by its direct agents, have finally turned it over to the Messrs. Dodge, of this city, who hold the majority of its indebtedness. A lease has been made to these gentlemen—including all the mines, mills, machinery, goods and chattels thereunto belonging—for the term of one year.

Under the new regime the minors employed are to work the mines for wages—if they can get that much out of them, and if not they divide what they do get—the lessees not being responsible for the pay of the hands. Any surplus goes toward cancelling the old indebtedness of the company. In consideration of this arrangement, all attachments against the company have been released. The attaching creditors consent to this arrangement, and the object is to work out the debts of the company. Dodge Bros. have a high standing in San Francisco as honest and sagacious business men, and being in easy circumctances, pecuniarily, can more readily push through the heavy business connected with so important and complicated an undertaking.

VENTILATING MINES.

To ventilate mines by means of steam and heated air, without the use of open fires and furnaces, has been provisionally specified by Messrs. Evans, of Cefu Mawr, and Griffiths, of Merthyr Tydvil. They propose to erect, contiguous to the upper part of the upcast shaft, a tower or structure open at the top (except as hereafter stated), and they lead from the lower part of this hot air tube in communication with a fire clay pipe, formed at one or each side of this furnace in the form of a channel, the air in the pipe being thus heated in the furnace, and supplying the interior of the tower in the lower part; and they prefer to carry a steampipe from the top of the steam-boiler into an upper point of the said tower, at the end of which steampipe they provide a steam-box, with a ring of jet pipes projecting upwards, and at the top of the tower there is an inverted cone, for regulating the draught The bottom of the tower is made inclining to the center, so as to form a drain, to carry off any condensed water. Instead of placing the furnace and boiler out side the tower, or structure aforesaid, they can have it, or portions of it, placed within the tower.—*London Artizan.*

TAR IN MAINE.—Sixty barrels of tar, the first ever manufactured in the State of Maine, were recently brought to market and sold for from six to seven dollars per barrel.

STATISTICS OF MAGNESIUM.

The light emitted by a wire one-thousandth of an inch in diameter, is equal to that of seventy-four stearine candles of five to the pound: 3 feet of it are burned per minute, or a quarter of an ounce per hour, the cost of which, at the present price, would be about 2s. 6d. Seventy-four stearine candles would, however, in the same time, consume 2 lb. of stearine, which would cost 2s.: 40·4 cubic feet of 12-candle coal gas would be required to produce the same effect, and would cost about 2¾d. The dearness of magnesium arises from the dearness of sodium required in obtaining it. Sodium is now 10s. per lb., and one pound, under the most favorable circumstances, would be required for a pound of magnesium. But increased demand will, no doubt, cheapen sodium, and in other ways render the production of magnesium more economical. Already the Magnesium Metal Company have reduced the price of magnesium more than fifty per cent. Magnesium gives off 265 times less heat than gas. Gas and candles vitiate the air by the production of watery vapor and carbonic acid: magnesium is free from this objection, but it has an inconvenience of its own: a large quantity of calcined magnesia is thrown off as a fine powder, which soon renders the atmosphere of a room intolerable. This is also objectionable in photography, though used for very short periods. For ordinary purposes it would render some peculiar mode of ventilation, or purification yet to be discovered, indispensable. Perhaps the smoke might be conducted through water and there condensed. At best magnesium can be only an imperfect substitute for sunlight: its light has been found to be only the 4-525th of that of the sun on a bright November day; but, at the same time, its chemical effect was ascertained to be the 1-36th of that of the sun.

TRINIDAD PETROLEUM.

It is now a clearly ascertained fact that petroleum oil springs have been discovered in Trinidad, and the discovery cannot fail to bring more or less benefit to the island. In oil the operations are so much surer, easier, quicker, and more profitable than in coal mining, asphalte works, or manufacturing works generally, that there is less chance of disappointment. American capitalists' representives are eager to purchase, and deposits, to be forfeited unless the contract be completed within a given time, have been paid. One found oil on St. Mary's estate, Cepros, and it now appears that it has been locally known there for years, and that the negro laborers have been in the habit of scooping it out of the earth in calabashes for their home use, very dirty, of course, and mixed with much foreign matter, but yet available for lighting purposes after the earthy, and vegetable matters mixed with it had been left to settle. Mr. Bennett, the manager of St. Mary's, states that if the clay where the oily substance is found be squeezed the oil will run out, and that the sandstone rocks, of which most of the bluffs along the beach (some contain lignite in abundance) are composed, is saturated with the oil, which could be run into boats lying in the smooth water of Cedros Bay, by an adit and pipes, without even boring, so that something must surely come of the discovery. Oil has been found at Oropouche, on the estate of Mr. Lange, and will probably also be found at many points between Oropouche, (though Guapoa, Irois, and Cedros) and Icacos point, 25 miles distant, for throughout that line the same geological formations exist. The central and northern parts of the island are of different geological character, and not likely to have any oil; and in the only two places where the oil has yet actually been found the country is unfortunately, very unhealthy in some seasons or years, for recently arrived, and even at times for old resident persons from north-climates; but there will not long be need of European or American resident managers, as Creole superintendence, as well as labor, will be easily attainable. More than twelve months since I directed the attention of Mr. Hamilton Warner, of San Fernando, who has taken out some useful patents for the treatment of the natu-

ral pitch, to the probability of finding oil near Oropouche and La Brea, yet he failed to take the hint, and permitted foreigners to get the honor of the discovery.—*English paper.*

SATISFACTORY RETURNS.

The first class ores from the Colorado river country sent over to Europe for smelting have thus far yielded much more heavily than was anticipated, and the reputation of that country has advanced accordingly with great rapidity. Some of these ores yield enormously, and even the second and third class ores are found to pay handsomely, over all expenses of mining, transportation and working. The everage yield of the Planet ore, from Bill Williams Fork District, has been over forty per cent in copper alone, and the ores of other companies located lower down the river, are yielding as richly in copper, with considerable amounts of silver and gold. A lot of the second class ore from the Great Central mine, Weaver District, which the Superintendent, Mr. Thompson, did not feel certain would pay the expense of shipping and working, sold in Swansea at between $90 and 100 per ton after careful analysis, which rate would leave a profit to the company of nearly or quite 100 per cent. over all expenses, or in other words return $2 for every dollar invested.

The Great Mass of Native Copper which was discovered in one of the Lake Superior copper mines a year or more ago is still in process of extraction. We have seen no statement of the amount which has been removed, but presume it must amount to many tons. The Portage "Mining Gazette," says, that the average weight, per cubic foot, of that which has already been shipped, has been 420 pounds. Work about the mass has been prosecuted sufficiently to admit of a pretty accurate measurement of the bulk of that which remains, which is stated to be twenty-five by thirty feet in length and breadth and two feet thick. This would give a cubic measurement of 1,500 feet, and a weight of three hundred and ninety tons.

Mining in Australia.—The latest mining news from Australia appears to be very favorable. The quantity of gold dust imported into the Sydney Branch of the Royal Mint, from the 1st of January to the 21st, for the purpose of coinage, amounted to 53,049 ounces. The coin issued during the same period has been 124,000 sovereigns. For the corresponding period of the year 1864, the receipts of gold dust amounted to 22,215 ounces, and the coin issued consisted of 58,000 sovereigns.

The amount of gold dust delivered by the escorts from the several gold fields during the first three weeks of the present year, was as follows: Western, 6,806 ounces; Southern, 10,299 ounces; Northern, 370 ounces. Total, 17,475 ounces.

Action of Sea and other Water on Metals.—From experiments instituted by Messrs. Calvert and Johnson, it appears that steel is the metal which suffers most from sea water; that iron is materially preserved by zinc, as in "galvanized iron;" that iron and oak mutually destroy each other in sea water; that copper is much less injured by sea water than iron, and zinc than copper; and as for lead, there was no trace of the action of the sea water at all. This surprised the experimenters, and they tried the effect of different waters on lead with the following result:—Amounts of metals dissolved by 200 litres of the waters upon one square metre of surface during eight weeks:—

	Grammes.
Manchester Corporation water....	2.094
Well water.....	1.477
Distilled water (with air)	110.003
" (without air).....	1.829
Sea water.....	0.038

Metallic Ceiling.—While all other departments in the internal decoration of houses have kept pace with improvements in other branches of industry, it is a somewhat remarkable fact, and one that has long engaged the attention of architects, that the ceiling of our rooms, with their unseemly blisters and network of cracks, are still, generally speaking, just what they were many years ago. Mr. Little has invented a system for the construction of ceilings, which consists in the application to the joisting of very thin-stamped ductile metal in ornamental embossed panels of such sizes and shapes as may be required. These stamped panels are fitted for every kind of decoration in colour, and, if inserted as plain surfaces, may be used as the ground for every description of cartoon painting, combining with lightness and durability artistic and ornamental effect, at a comparatively small cost. Besides its applicability to the ceilings of rooms, and all public buildings, churches, &c., the system may be made use of with the same effect in staircases, halls, and porticoes, and even on the walls of the rooms.—*Kyland's Circular.*

A RIVAL OF COAL OIL.

A Hartford paper gives the following:

In the town of Windsor, on Mr. James Harvey's land, five miles from Hartford, is a spring, on the waters of which, when ponded, rises a coating of tallow, about three eights of an inch in thickness. It resembles and will burn like beef or mutton tallow. Near by this spring, on Mr. Harvey's land, lumps of clear tallow have been dug.—*Exchange.*

The substance alluded to, says the San Francisco Mining Press, is undoubtedly maltha, or mineral tar, also known as sea-wax, a viscid variety of asphaltum, which often occurs of a very light color, much resembling a poor quality of tallow. It melts at a very low temperature, and in cooling assumes the consistence and appearance of cerate, an ointment made of wax and oil. It has long been known as a somewhat rare bituminous substance, and is identical with the bitumen candidum—white bitumen—of Pliny. It lacks the pitchy quality which accompanies most varieties of bitumen. This substance probably contains more of the illuminating principle than any other of the viscid varieties of bitumen, and would doubtless be found very valuable, also, for its lubricating qualities. It is less disagreeable in smell than petroleum. It is found on the surface of Lake Baikal, in Siberia, under conditions almost identical with those spoken of in the above extract from a Connecticut paper. It also occurs at the foot of the mountains of Bucktiari, in Persia, and in several other localities.

It is more than probable that the discovery in Smoky Valley, alluded to in the Reese River Reveille may be of this character.

Petroleum as a Steam Fuel.—In some experiments made by Mr. C. J. Richardson, at Woolwich Dockyard, with his improved petroleum boiler, he has succeeded in evaporating 150 gallons of water with 14 gallons of petroleum. It appears that with the improvements he evaporises, on the average, at the rate of 12¾ lbs. of water per one gallon of petroleum, and Mr. Richardson anticipates reaching 14 lbs. or 15 lbs. with the gallon of petroleum. For such early trials, he considers the results hitherto obtained are extremely satisfactory. The oil is under perfect control, there is no danger whatever, and the boiler is very easily worked.

Paper Pipe.—The Portage (Lake Superior) "Mining Gazette," says that paper pipes, six inches in diameter, are used in the Pewabic copper mine to convey air from one portion of the mine to the other. The pipe is six inches inside diameter, the paper being one-fourth of an inch thick. The pipes are quite strong and can be joined perfectly air-tight by a strip of canvass and a coating of tar.

A farm without fruit producing trees and plants, is like a house destitute of the smiles and joys of childhood.

The First Iron Ship.—An ironmaster, named John Wilkinson, writes to the Kendal Mercury, England, stating that he has found among the letters of his grandfather, James Stockdale, of Cork, one addressed to him on 14th July, 1787, by John Wilkinson, of Castlehead and Brosely, "the great ironmaster" of the time, in which he says,—"Yesterday week my iron boat was launched. It answers all my expectations, and has convinced the unbelievers—who were 999 in 1,000. It will be a nine days' wonder, and then be like Columbus's egg." The correspondent of the paper named, therefore thinks that John Wilkinson and not Mr. Ramsden, was the inventor of iron shipbuilding. John Wilkinson was an eccentric man. In his garden grounds at Castlehead, for many years, he kept a large iron coffin to be ready for himself. It stood amongst the laurel trees near the house, along with many other smaller ones, which he took a delight in showing and offering to his friends gratis, to their utter horror and dismay. This coffin led to his being three times disinterred and four times buried.

IMPORTANT NOTICE.

To Advertisers.—Our paper offers a superior medium as an advertising agent, to all those who manufacture or sell machinery or appliances of any kind for Gas, Mining, Water, Sewerage, the production or purification of Oils, &c. &c., not so much on account of a wide spread circulation, as from the fact that it goes directly to the hands of those who are constantly using and requiring machines and improvements for these branches, and who look hrough our columns for information where to procure them. The class of people who read our paper not only peruse our pages of reading matter, but read the advertisements as well, for the reason that they are directly interested in all things pertaining to their business. We therefore ask, with confidence that we can do them justice, all parties having machinery or improvements of any kind for either of the objects to which our paper is devoted, to send in their advertisements and avail themselves of these advantages. It will be observed that our terms for advertisers are very reasonable.

MINERALS IN NEW HAMPSHIRE.

We have been favored by the perusal of a letter to gentleman of this city, and we extract the following:

"I have spent the last week or two roving over the State of New Hampshire, on a kind of geological tour, where each was left to follow the bent of his own inclination during the day—the law being peremptorial only in this: "A report in person must be made twice in 24 hours." Availing myself of this privilege, I, hammer in hand, started off on a prospecting survey, so that I was on duty continually, but always detatched.

n my meanderings, I traversed Coose county pretty thoroughly, and truly some of the mineralogical developments astounded me. In no less than four locations, in the neighborhood of Randolph, I casually picked up but a little distance from the road, some beautiful specimens of iron pyrites, and also of the sulphuret of copper—thus developing a peculiar geological formation. I am convinced that the hills in the neighborhood will be found to yield a rich supply of the above named ores. So perfectly am I satisfied of this fact, that I intend making a more minute examination, and will report progress as soon as I am able to do so."

The scientific expedition to Brazil, under Agassiz, is chiefly to test his glacial theory, which is that at some past period a very large part of the earth was long covered with two vast caps of snow and ice, centered at the poles, lapping far down toward the equator, and in many parts 12,000 or 15,000 feet thick.

THE MINING & PETROLEUM STANDARD AND AMERICAN GAS-LIGHT JOURNAL, is published at Tribune Buildings, No. 1 Spruce st. on the 2d and 16th of every month, and is a recognized official organ of—

LIGHT, HEAT, MINING INTERESTS.

PETROLEUM, WATER-SUPPLY, AND

SCIENTIFIC SUBJECTS GENERALLY.

JAMES W. BRYANT, EDITOR AND PROPRIETOR.

W. S. SHERMAN, PUBLISHER.

PROF. C. ELTON BUCK, CONSULTING CHEMIST.

SUBSCRIPTION—Three dollars per annum in advance.

ADVERTISEMENTS.—One dollar per inch in column for each insertion. Large space or long time by special contract.—Payable in advance.

☞ All communications to be addressed to "The Editor," No 1 Spruce Street, New York.

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☞ *Private Office, No.* 111 *Pearl street.*

☞ *Publishing Office, No.* 1 *Spruce street.*

The Mining and Petroleum Standard

AND

AMERICAN GAS-LIGHT JOURNAL,

PUBLISHED ON 2D AND 16TH OF EVERY MONTH.

JAMES W. BRYANT, ... EDITOR.

FRIDAY, JUNE 16, 1865.

☞ We shall have bound, some twenty or thirty volumes of our last year's issue, which we will furnish to subscribers at $4, or to non-subscribers at $5 per volume.

HUBBEL'S GOLDEN BITTERS.—The adage, "The proof of the pudding," &c., is a trite one, and in reference to Hubbel's Golden Bitters we can say that we have used them as a recuperating tonic, and believe they have been very beneficial to our health. The ingredients of which this article is compounded, are all healthful in themselves, and as a whole make a pleasant beverage of the kind. We recommend them with confidence that they are as good at least, as any bitters in the market, and their general use confirms our good opinion of them. See advertisement.

The Toad lately found by some quarrymen at Hartlepool, and announced to be 6000 years old, is declared not a myth. The Rev. Robert Taylor, of St. Hilda's Parsonage, states that the toad is still alive, that it has no mouth, that it was found in the centre of a block of magnesian limestone, 25 feet below the surface of the earth, and that it differs in many respects from all ordinary toads.

BREATHING IN SMOKE AND POISONOUS VAPOURS.—An ingenious Frenchman has invented a respiratory apparatus, by means of which a man, it is said, may breathe and walk about in the midst of the most deleterious atmosphere. The invention consists of a tin knapsack, which is strapped to the back, and filled with compressed air. Communicating with the mouth is a series of tubes, which supply fresh air to the lungs, and carry off the exhalations; while the nostrils are closed with a spring, and the eyes protected from the action of injurious vapours or dense smoke, by tightly-fitting glasses. Experiments are being made with this apparatus at the Polytechnic, in England.

TO OUR PATRONS.

This number closes the volume of our Journal which has been under our administration for the past year, and it is with great pleasurable satisfaction we look over its pages and refer to the relative incidents which have occurred during that period of its progress. The protracted illness of the Editor prevented him from devoting so much attention to the Journal as he desired, but we feel assured our patrons will see, upon reference to the index, which will be sent with the July number, that quite a mass of valuable matter has been compiled.

That the Journal has been satisfactory to our readers we have had evidence of a "material" character, and we take this opportunity to thank our patrons for their very prompt attention to our bills, and it is no small convenience to have such attention, because the subscription price is so low that we cannot afford much time to make the collections.

We shall commence our next volume under favorable auspices, and having secured some additional editorial aid, we will promise to make our forthcoming volume superior to the one now closing.

We are quite proud of the character of our advertisements, as they are from houses and establishments of the first class in their respective business—and as our advertising space is limited, we shall only solicit advertisements from such parties as we can personally recommend as reliable.

Asking a continuance of patronage, we offer our salutations generally to our readers.

NEW AND WONDERFUL DISCOVERY.—The Virginia Union chronicles the discovery of mines of amalgam, silver and gold held in quicksilver. Mills are not necessary to work the ore; all that has to be done is to scrape the amalgam out of the rock and retort it. The Union is afraid to state the exact sum which this amalgam assays per ton, but it is over $10,000. It may be interesting to say that this wonderful discovery was made in the Green Series of ledges, Pine Mountain District—*Exchange.*

The above mineral, if the statement can be relied on, is probably allied to "Arquerite," a name given to a mineral found at Arqueros, near Coquimbo, South America. As found there it is an amalgam of mercury and silver, with the formula Ag6 Hg—silver 86.49, mercury 13.51. Before the blow-pipe the mercury volatilizes and the silver remains. The same mineral also occurs in the Palatinate at Moschellandsberg, but with a different formula, varying slightly from Ag Hg3. It is said to occur at points where the veins of mercury and silver intersect each other. It is also found in various proportions of mercury and silver at Rosenau, in Hungary, Sala, in Sweden, and Almaden, in Spain. It is a very rare mineral. Probably it has never, heretofore, been noticed in any country where silver is found in connection with gold. All the silver found in Washoe, we believe, carries with it more or less gold; hence it might be expected that a vein of Arquerite, if discovered there, would carry gold as well as silver.—*San Francisco Mining Press*

GAS STOVES.—This invention relates to gas stoves for cooking purposes; and it consists in a novel arrangement of burners and heating passages, and novel form of the oven to provide for the heating of the oven at the bottom, sides, and top, and for the use of the waste heat from the oven-heating burner or burners, for boiling and other cooking operations which can be performed on the top of the stove. Edwin A. Leland, of New York city, is the inventor. The patent is assigned to Lockwood & Everett, of New York city.

DIFFERENT KINDS OF OIL.—The Colusa Sun, in alluding to the difference in the appearance of the oil obtained from the various localities in that county, says:—

"We are now satisfied that there is but one kind of oil in the district in this county. Dr George, who has been in that region for several months, is of the opinion that the different colored oil we get is entirely owing to the different chemical substances through which it passes, so that when the fountain is reached it will all be alike. We have ourselves noticed places where the oil was thin and clear when it first came out of the ground, and would get thick and dark after it came in contact with the water on the surface.

THE Sandwich Islanders have struck oil, having gone into the manufacture of that article from the castor beans that grow wild on Hawaii.

MARYLAND COAL TRADE.—The Alleganian states that the agents of the coal companies of this region have reduced the prices of mining from 1 to 60 cents per ton, and of transportation by canal from $3 to $2 per ton.

PETROLEUM REVIEW.

June 2.—The market is dull and much depressed; sales have been made at 35 cts. for Crude, buyer and seller all next month; on the spot there is nothing doing, and prices are nominal at 36 cts. for Crude; 51 and 52 cts. for Refined in bond, and 70 and 72 cts. for do. Free.

June 3.—There has been no great desire to purchase, and in order to effect sales holders were compelled to lower their quotations at the close; prices are entirely nominal at 35 cts. for Crude, 51 and 52 cts. for Refined in bond, and 71 and 72 cts. for do. free; Naphtha is scarce and decidedly better; we quote at 48 and 50 cts.

June 5.—Receipts to day are 1,570 bbls. including 1,096 per Erie and 474 per Camden; the market has been decidedly more active for the future, but for parcels on the spot there is but little inquiry; prices have declined, and are heavy at the close; Crude is offered freely at 34 cts.; Refined in bond at 49 cts. and refined, free, 69 cts. all without buyers; we note sales of 2,500 bbls. Crude, buyer's option, from the 15th of June to the 15th of July, at 35 cts. and 500 bbls. Refined in bond, buyer all this month, at 49 cts.

June 6.—Receipts to day 1,563 bbls. including 813 per Erie and 750 per Camden; the market is less active and prices are easier; sales of 500 bbls. Crude, buyer next month at 34 cts. we quote on the spot at 34 and 34½ cts. for Crude; 48 cts. for Refined in bond and 68 cts. for Refined free.

June 7.—Receipts to-day are 1,045 bbls. including 617 bbls. per Erie, and 428 per Camden; the market still rules very dull; we hear of no sales; prices are nominal at 34 and 34½ cts. for Crude, 48 and 48½ for Refined in bond, and 68 and 68½ for do. free

June 8.—Receipts to-day are 1,359 bbls. including 1,141 per Erie, and 21 per Camden; the market is dull and prices are nominal at 34 and 34½ cts. for Crude; 48 and 49 cts. for Refined in bond; and 68 and 69 cts. for do. free.

June 9.—Receipts to-day, 2,163 bbls. including 379 per Erie, and 784 per Camden; the market is firm at 35 cts. for Crude; 49 and 50 cts. for Refined in bond, and 68 and 70 cts. for do. free; sales of 1,000 bbls. Crude, buyer's option, June, at 36 cts.

June 10—Receipts to-day are 214 bbls. per Camden, the market is quiet, but prices are without special change, we quote Crude at 35 and 35½ cts. Refined, in bond, 49 and 50 cts. and do. free at 69 and 70 cts.

June 12—The market is quiet, but prices are without change. We quote at 35 and 35½ cts. for Crude; 49 and 50 cts. for Refined in barrels, and 69 and 70 cts. for do. free.

June 13.—Receipts are 358 bbls. per Camden; the market is quiet at 35 and 35½ cts for Crude; 50 cts. for Refined in bond, and 68 and 70 cts. for do. free.

June 14—Receipts to-day, per Erie, are 1,081 bbls. the market for all descriptions is firmer, but not active, sales at 35½ and 36 cts. for Crude, 50 and 51 cts. for Refined, in bond, and 69 and 70 cts. for do. free

June 15.—Receipts to-day, 669 bbls. including 246 per Erie and 423 per Camden, the market is quiet, but at the close prices are a shade firmer, we quote at 35 and 35½ cts for Crude, 49 and 50 cts. for Refined in bond, and 69 and 70 cts. for do. free.

NEW YORK MINING EXCHANGE.

New York, June 15, 1865.

	Bid.	Asked		Bid.	Asked
Copper Stocks.			***Gold Stocks.***		
Aztec	7⅛	9	Benton	1	1¼
Bedford	1	1⅛	Consol'd Gregory	25	28⅞
Boston	4⅛	5¾	Corydon	—	3
Caledonia, A. P.	10	12	Gunnel	3⅜	4⅜
Canada	3⅛	4	Great Western	—	8
Carp Lake	3	5	Hope	—	9
Central	65	70	Isaac's Harbor	¾	⅞
Columbian	—	24	Manhattan	—	9
Copper Falls	34⅛	38	Mariposa	44	44¼
Clifton	—	81	Montana	⅜	1
Dacotah	—	5⅛	New York	2⅜	3
Derby	⅞	1⅛	N. Y. & Nova Scotia	⅝	1⅜
Douglass	—	—	Quartz Hill	9¾	10
Evergreen	18¾	20	Quicksilver M'g Co	81	82
Flint Steel River	12	13⅛	Rocky Mountain	—	10⅜
Frue	2¾	5	Smith & Parmelee	7	12
Grand Portage	—	—			
Hancock	12¾	14	***Coal Stocks.***		
Hamilton	—	6	American	98	100
Hilton	5	6	Ashburton	—	25
Hudson	1	2	Central	62	65
Huron	32	33	Cumberland	61	62
Indiana	8¾	9¼	Del & Hud. Canal	206	208
Isle Royale	20	20½	*Hampshire & Balt.	104	110
Keweenaw	—	6	Pennsylvania	213	215
Knowlton	7	10			
Lafayette	1	2	***Lead Stocks.***		
Manhattan	—	—	Bucks County	⅝	⅞
Mendota	—	—	Clute	1⅜	1⅝
Merrimac	4¾	5⅛	Erie	—	20
Minnesota	33	37	Macomb	3¼	5
New York, A. P.	2	3⅛	Plancentia Bay	1¼	1⅜
N. J. Consolidated	4	4¾	Sussex	¾	⅞
Norwich	—	6	Wallkill	3½	6
Ogima	5	6¼			
Ontonagon	3	4⅛	***Iron Stocks.***		
Penn	—	11½	Copake	8	10
Providence	1⅜		French Creek	¾	1
Quincy	96½		Teal Lake	4½	6
Reliance	1⅛				
Rockland	12⅜		***Miscellaneous.***		
Superior	8⅜		Rutland Marble	17	20
Sharon Consolidated	—		* *Ex. div.*		

A SITUATION IS WANTED

As Superintendent of Gas Works, by an experienced and capable Gas Engineer, who will give satisfactory references as to his integrity and ability. He has had six years practical experience in the management of Coal and Resin Gas Works. Address,

☞ R. Horton, American Gas Light Journal, No. 1 Spruce street, N. Y. 126.

TO GAS COMPANIES.

For sale at the Island Works of the Gas Co., Washington, D. C.,

1 Retort House Roof, frame of iron, 141 feet long, 53 feet wide, with the slate attached.

All the Iron Work belonging to 28 benches of three Retorts each.

4 Washers, 18 inches diameter.

4 Purifiers of wrought iron, 5 feet by 11, with lids, &c.

2 Eight inch Slide Valves.

1 Five foot Station Meter, together with sundry connections, the whole forming a complete Gas Station in good order. For examination, apply to

Geo. A. McIlhenny, Eng. Gas Works, Washington, D.C.

For purchasing, apply to B. H. Bartol, Philadelphia.

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Trains leave from Foot of Chambers Street,

via Pavonia Ferry:

A. M., Day Express, for Canandaigua, Rochester,
7. Buffalo, Salamanca and West. Connects at Buffalo with Lake Shore and Grand Trunk Railways and at Salamanca with Atlantic and Great West, ern Railway.

A. M., Milk and Way Train, Daily to Otisville.

8·30 A. M., Express Mail, for Buffalo, connecting
10·0 with Lake Shore Railway.

4·00 P. M., Way Train, for Port Jervis and Newburgh.

5·00 P. M., Night Express, for Canandaigua, Rochester, Buffalo, Salamanca and West.

6·00 P. M., Lightning Express, Daily, for Canandaigua, Rochester, Buffalo, Salamanca, Dunkirk and West. Connects at Buffalo with Lake Shore and Grand Trunk Railways, and at Salamanca with Atlantic and Great Western Railway.

8·00 P. M., Emigrant Train, Daily, for Buffalo, Salamanca, Dunkirk and West.

TO GAS COMPANYS.

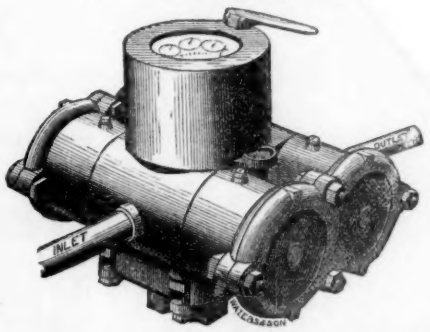
The undersigned would inform those about erecting works or fitting up old Benches, that he has had many years experience as mason, in building and fitting up Benches, and that he will attend to all orders from any part promptly, and offers for Reference Joseph A. Sebatton, Engineer of the Manhatten Gas Company,

Address, P. H. Spelman,

132 242 Third Avenue, New York City.

ADVERTISEMENTS.

H. R. WORTHINGTON'S



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This Meter is also used for the measurement of Oil —it combines

ACCURACY, SIMPLICITY, and REMARKABLE DURABILITY,

with such ease and certainty of motion, as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream. These qualities, with its low cost, have caused its extensive adoption by corporations and individuals, in many of our largest cities.

HENRY R. WORTHINGTON,
61 Beekman steet, N. Y.

CHASE & CO.,

New York and Philadelphia Ornamental Iron Works.

GARDEN ADORNMENTS,

VASES, FOUNTAINS, STATUARY, ARBORS, RUSTIC CHAIRS, SETTEES, TRELLISSES, &c.

Cemetery Embellishments,

URNS, IVY CROSSES, GRAVE BORDERS, WIRE ARCHES, BOQUET VASES, &c.

Wire, Cast Iron and Bronze Railings,

For enclosing Lots, Public Squares, &c.

☞ *Iron Furniture, Bedsteads, &c., &c.,*

The largest variety in the United States.

STABLE FIXTURES,

RACKS, MANGERS, &c.

No. 524 Broadway, New York,

Opposite St. Nicholas Hotel. [127

JOSEPH NASON & CO.,

No. 61 Beekman street, corner of Gold,

NEW YORK.

Manufacturers of WROUGHT IRON PIPES and Fittings for Steam, Gas and Water, Boiler Flues, Steam Boilers, Coils, Heaters, Evaporators, Pumps, Ventilating Machinery, and Apparatus for Warming Buildings by Steam and Hot Water.

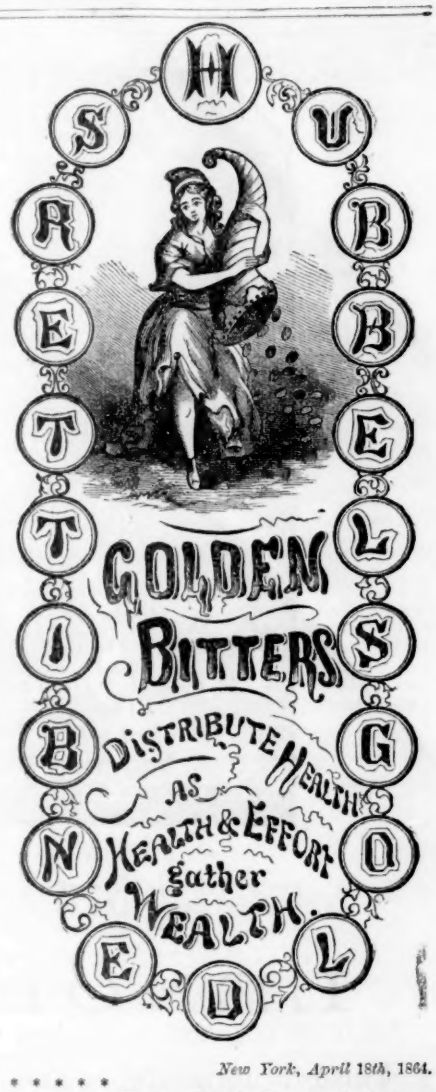
OIL TUBING, CAST IRON DRIVING PIPE, Boring Tools, Oil Pumps, Sand Pumps, Stuffing Boxes, Tongs, Clamps, Swivels, Joints, &c. 131

U. S. MAIL LINE FOR CALIFORNIA, via Panama, under convoy of a United States war steamer throughout the Atlantic voyage.

Leave New York on the 1st and 16th of every month, at 12 o'clock, noon.

For freight or passage apply to

D. B. Allen, No. 5 Bowling Green.



New York, April 18th, 1864.

* * * * * *

We respectfully invite your attention to and consideration of the justly celebrated and reliable remedy for Dyspepsia, Heartburn, Debility and Prostration. The Proprietors are proud to acknowledge the unparalleled success which has attended the sale of their valuable preparation, known in nearly every portion of the civilized world as the

"GOLDEN BITTERS."

We risk nothing when we term them a *valuable preparation*, for they are one of the few articles of the present day which are not a humbug; and we are willing and able to satisfy any person or persons who will call upon us, that the celebrated "Golden Bitters" are a genuine *bona-fide hygienic* article. It is the wish of the proprietors that the virtue of the article be tested before condemning. A decision of their merits by any one who has tried them, is worth a million of purchased bogus testimonials.

For Creating a Healthy Appetite

they are invaluable, and are unequalled as a Tonic. They are mild in their action, and operate by giving *vigor* and *strength* to the system,—not by any change they produce in the solids, but through the medium of the living principle.

They are Purely Vegetable,

being composed of Gentian Root, Calamus, Sassafras, and many other remedial agents of the Vegetable world, all preserved in Jamaica Rum and Sherry Wine.

As a Beverage,

They are the most *wholesome, invigorating* and *palatable* stimulant ever offered to the public. And the fact of their being prepared chemically and scientifically, precludes the possibility of a bitter, unpleasant taste, common to Bitters generally offered for sale. We especially recommend them to Ladies, and particularly to those suffering from

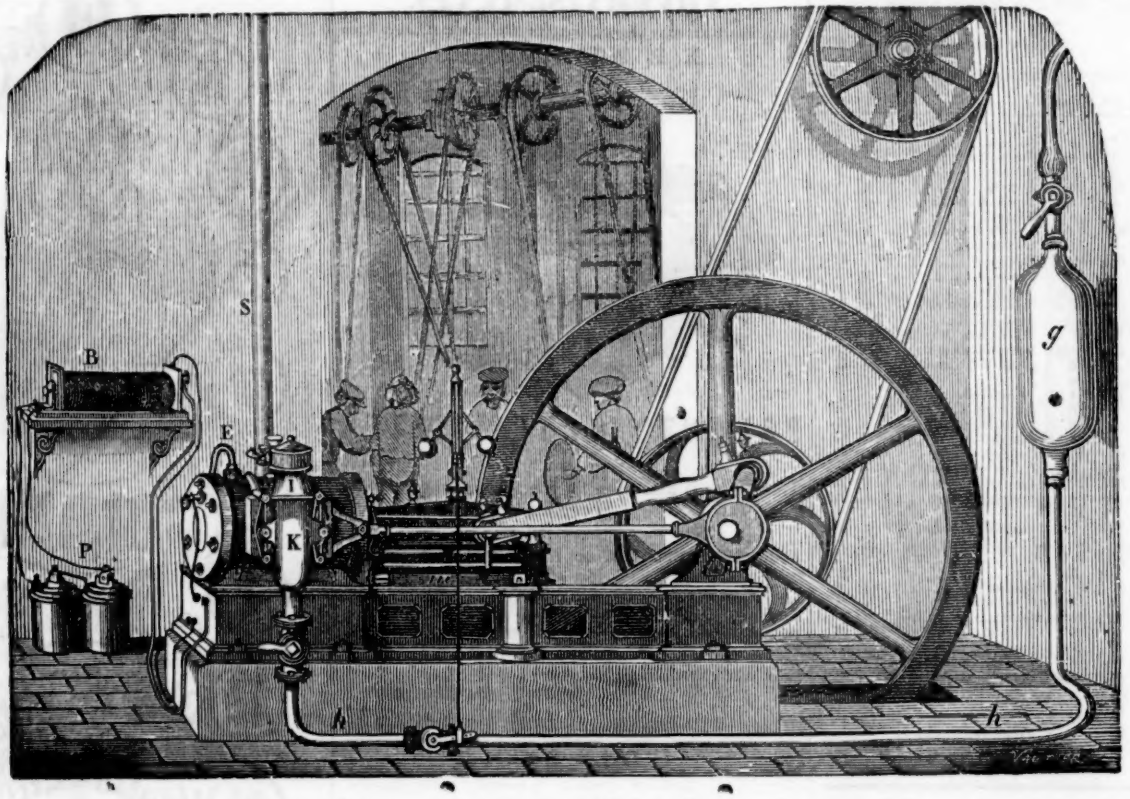
DEBILITY, WEAKNESS, AND PROSTRATION.

Half a wine glass of these "Bitters" three or four times a day, will produce a remarkable healthy change in persons greatly debilitated.

The "Golden Bitters" have been tried and not found wanting. They are put up in our own *Patent* quart bottles, and for sale by Druggists, Grocers, &c., throughout the world. Each bottle bears a fac-simile of the signature of Hubbel & Co.

GEO. C. HUBBEL & Co., Sole Proprietors,
CENTRAL DEPOT, American Exp. Building, New York.

The Golden Bitters.—We are not an advocate of stimulants of an alcoholic character; indeed we deprecate this "daily tonic" idea—this "morning toddy" which we see offered in all sorts of shapes as a recuperator, invigorator, revitalizer, &c. As a rule all artificial stimulants are dangerous remedies, and must be taken into the system as you would mercury or arsenic, in very small doses. But we have had an opportunity to try the now well-advertised article known as Hubbel's Golden Bitterz, and are frank to say that where the system needs building up, where a stimulant is required to aid nature in restoring a lost appetite and infusing a vigorous action to the debilitated functions, we can recommend these Bitters. Hubbel's Golden Bitters are evidently intended to improve the debilitated human system, rather than to tickle the palate, and are, therefore a harmless and safe remedy o keep in the house.—*New York Weekly Day Book.*



MOTEUR—LENOIR.

LENOIR GAS ENGINE.

This is a horizontal engine, in which a piston, by a connecting rod drives a horizontal shaft.

The gas enters by the pipe "h" from the regulating reservoir "g," (made of vulcanized india rubber,) which regulates the feeding and the branches connected with the gas-pipe.

The tube, K, receives the gas conveyed by the pipe "h," and conducts it to the valve, which opens and closes alternately, by means of a rod moved by an eccentric wheel fastened to the end ot the shaft.

Two of Bunsen's piles, P, sufficient to produce the electricity are placed at a little distance from, and in communication with a Ruhmkorff electric apparatus, B. The electric current of this apparatus is conducted by means of insulated wires to the electricity distributor "m," placed on the front of the frame, while the current of electricity and its arrival at the inflammator, inserted at each end of the cylinder, is directed by the movement of the piston-rod, which, by an ingenious combination, impels a small movable slide before the distributor.

The burnt gas, after having performed its functions in the machine, escapes, by means of a valve, through a pipe, S, and the water designed to cool the interior of the cylinder enters through a double passage, by means of a pipe situated near the escape-valve, and goes out by the pipe, E.

A two horse and a half horse Engine are now in practical operation at the Dry Dock Iron Works, No. 435 East Tenth street, near East River, New York, where they are being manufactured, and those interested are invited to call and examine them.

THE LENOIR GAS ENGINE

Requires no Fire and makes no Smoke,

No Noise, no Dirt, and is thoroughly safe.

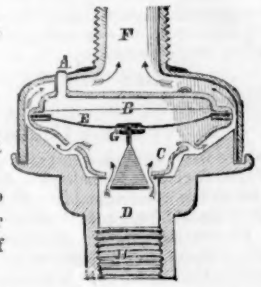
It is propelled by the expansion of Air, dilated by the combustion of Gas within the cylinder, ignited by the

ELECTRIC SPARK

NOTICE TO GAS COMPANIES AND GAS CONSUMERS

THOMPSON'S PATENT GAS CONTROLLER,

The only Self-Acting Gas Controller, Regulator, and Burner Combined which has ever been invented, or known to science.



THE PRINCIPLE UPON WHICH THE THOMPSON'S AUTOMATIC GAS CONTROLLER works is one well known to mechanics, and is simple in its operation.

Within the circumference of a small cylinder below the burner is placed a conical valve attached to a movable diaphragm. The diaphragm rises or falls as the pressure of gas from the pipe is lesser or greater, and the valve acts upon the valve-seat with such regularity of movement that in a difference of from five-tenths of an inch pressure to five inches the variation in flame is hardly perceptible.

The simplicity of its machinery and the nature of the material used in its construction insure its regular action and durability.

In consequence of the uniform quantity of gas which passes the Controller to the burner, there is no waste, and a steady, soft flame is produced, which is important to all who read, write, or work by gas light. The unsteady flickering blaze which invariably exists when the pressure of gas is beyond the requisition for consumption, has injured the sight of thousands who have been subjected to it.

For street lamps these Controllers are especially valuable, because the pressure varies materially during the night, and in consequence there is a waste of gas, and the light variable.

Improvements have lately been made in the mechanism of the Controller which makes them almost a perfect meter to each burner, and they are now offered to the public with more confidence than ever before.

Reference is permitted to the following named gentlemen—

Col. CHAS. ROOME, President Manhattan Gas Company, N. Y.
C. H. SANDS, Esq., President Metropolitan Gas Company, "
J. H. ADAM, Esq., President New York Gas Company, "
PETER COOPER, Esq., Cooper Institute, "
JOHN A. DUFF, Esq., Olympic Theatre, "
GEO. H. KITCHEN, Inspector of Gas Meters, N. Y.
A. L. BOGART, Esq., Gas Engineer.
Col. J. A. SABATTON, Engineer Manhattan Gas Company.
Col. A. J. WHITE, Engineer Metropolitan Gas Company.
J. K. SIMPSON, Esq., Engineer Cooper Institute.

Persons interested are invited to call at the Office, 111 Pearl street, where they can see the operation by pressure guage and test meters

M. L CALLENDAR, Agent
Office, 111 PEARL STREET.

THE AMERICAN METER CO

Organized under the General Manufacturing Laws of the State of New York.

SAMUEL DOWN, PRESIDENT. HENRY CARTWRIGHT, VICE PRESIDENT. RICHARD MERRIFIELD, SECRETARY AND TREASURER.

TRUSTEES.

SAMUEL DOWN, WILLIAM HOPPER, R. H. GRATZ, HENRY CARTWRIGHT, RICHARD MERRIFIELD.
THOMAS C. HOPPER, *Superintendent at Philadelphia.*

This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS & REGISTERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

The combination of Mechanical and Scientific Skill, and the long experience of the several members of the Company, is a sure guarantee of durab ility, accuracy and excellence of workmanship. Orders addressed

AMERICAN METER COMPANY,

512 WEST TWENTY-SECOND STREET, NEW YORK,
ARCH AND TWENTY-SECOND STREETS, PHILADELPHIA,
No 23 WEST STREET, BOSTON, will meet with prompt attention.

HARRIS & BROTHER, PRACTICAL GAS METE MANUFACTURERS,

Continue, as heretofore, at their old Establishment, **No. 1117 CHERRY ST., PHILADELPHIA,** to Manufacture

WET AND DRY GAS METERS, and all kinds of GAS APPARATUS, and furnish all articles appertaining to the use of Gas Works. ☞OUR WORK WARRANTED—Satisfaction Guaranteed. Orders respectfully solicited, and promptly attended to, by
HARRIS & BRO., No. 1117 Cherry st., Phila.

Messrs. Harris & Brother, Philadelphia Gas Works, February 14, 1857.

Dear Sirs—I take great pleasure in stating that we have found your meters to register with entire correctness, and to be generally of very good quality; the number furnished by you to these works is over 5,000.
JOHN C. CRESSON, Engineer.

Office of the Gas Light Company of Augusta, Ga., March 6th, 1858.

This is to certify that having used meters manufactured by Messrs. Harris & Bro., for the last nine years, we do not hesitate to state they have given entire satisfaction in point of workmanship and accuracy of registration; they are surpassed by none, and equalled by few manufactories in the Union; we have used meters made by other establishments, but our preference is in favor of those made by Harris & Bro., of Philadelphia, Pa.
G. S. HOOKEY, Superintendent of the Gas Light Company of Augusta, Ga,

Messrs. Harris & Brother, Philadelphia. Philadelphia, March 4, 1858.

Gentlemen—We take great pleasure in bearing our testimony to the very superior character of the meters we have received from your establishment. We have always found the workmanship all we could desire, while the accuracy and reliability of their measurement have always been satisfactory. We have used meters made by other parties, and none have given as entire satisfaction as those received from you. We are, gentlemen, very truly, yours, BIRKINBINE & MEARS.

Messrs. Harris & Brother. March 14, 1857.

Gentlemen—For the last ten years we have used in the Philadelphia Gas Works, meters made in your factory and take pleasure in expressing my opinion a to their correctness. On several occasions I have taken your meters apart, and found the materials used in the manufacture of the same to be as fine quality as is used in those imported from Europe, or made by any of the manufacturers in the United States. Respectfully Yours, GEORGE WIEGAND,
Inspector of GasFittings, Philadelphia Gas rks

GROVESTEEN & CO.,

PIANO-FORTE MANUFACTURERS.

499 BROADWAY, NEW YORK.

The attention of the public and the trade is invited to our New Scale Seven Octave Rosewood Piano-Fortes, which for volume and purity of one are unrivalled by any hitherto offered in this marked. They conain all the modern improvements, French, grand action, harp pedal, iron frame, over-strung bass, etc., and each instrument being made under the personal supervision of Mr. J. H. Grovesteen, who has had a practieal experience of over thirty years in their manufacture, is fully warranted in every particular.

THE "GROVESTEEN PIANO-FORTE"

Received the highest award of merit over all others at the Celebrated World's Fair!

where were exhibited instruments from the best makers of London, Paris, Germany, Philadelphia, Baltimore, Boston, and New York; and also at the American Institute for five successive years, the gold and silver medals from both of which can be seen at our warerooms.

By the introduction of impro ements we make a still more perfect Piano-Forte, and by manufacturing largely, with a strictly cash system, are enabled to offer these instruments at a price which will preclude all competition.

PRICES.

No. 1, Seven Octave, round corners, Rosewood Plain Case, $275.
No. 2, Seven Octave, round corners, Rosewood Heavy Moulding, $300
No. 3, Seven Octave, round corners, Rosewood Louis XIV, style $325, a fac-simile of the accompaning cut.

TERMS—NET CASH, IN CURRENT FUNDS. Descriptive Circular sent free.

LILLIE'S

CELEBRATED

Chilled and Wrought Iron Safes,

WROUGHT IRON FIRE-PROOFS,

LOCKS AND VAULT DOORS.

These Fire-Proofs are manufactured to supply a demand for Security Against Fire, less expensive than my celebrated and superior Chilled and Wrought Iron Burglar and Fire-Proof Safes.

They furnish similar and equal security to the Safes generally manufactured in the different cities, but are SUPERIOR to them in their Fire-Proof qualities and durability, the iron being effectually protected from rust in any climate, and the Fire-proof not subject to lose its utility by age. This is an important advantage gained to the purchaser, as Safes often rust out and become worthless in two or three years.

To substantiate my position, those purchasing these Fire-Proofs are at liberty, by giving me due notice of time and place of trial, to test them by fire with any other Safe of the same size; and should they not prove superior, I will refund the money, or a new Fire-Proof, as the purchaser may decide.

LIST OF SIZES & PRICES OF WROUGHT IRON FIRE-PROOFS

	Outside.			Inside.			
No.	Height.	Width.	Depth.	Height.	Width.	Depth.	Price.
6	40	31	27	31	21	15	$150
5	34	21	26	24	21	14	125
4	31	27	25	22	18	13	110
3	30	24	24	21	15	12	100
2	28	22	23	20	14	12	75
1	24	19	20	17	11	10	50

Sample of Fire-Proof Safe at Office of the Am. Ad. Agency, 389 Broadway, N. Y.

PRICE LIST.

LILLIE'S CELEBRATED CHILLED & WROUGHT IRON SAFES.

BANK, FIRE, AND BURGLAR SAFES.
Folding Doors, D Lock.

OUTSIDE.				INSIDE.			
No.	Height.	Width.	Depth.	Height.	Width.	Depth.	Price.
	In.	In.	In.	In.	In.	In.	
1	66	50	29	54½	39	18	$950
1½	59	50	26	48	39	15	800
2	53	41	27	42½	33	15	600

MERCANTILE F AND B SAFES.
Folding Doors and Monitor Locks.

3	50	42	27	40	32	16	$500
4	46	42	27	36	32	16	450
4½	38	46	27	28	36	16	450
5	42	38	27	31½	27½	15	350

Single Doors and M. Lock.

6	38	35	26	27½	28½	15	$250
7	34	31	26	24	24	14	200
8	31	28	24	21	18	13	175
9	30	24	24	21	15	12	140
10	26	22	22	19½	18½	12	120
11	24	20	18	17	17	10	100

HOUSE SAFES

SIDE BOARD	.....	$600
DINING ROOM	.....	350
PANTRY (No. 1)	.....	275
PANTRY (No 2)	.....	150
DUODECAGON BANK LOCK	.....	100
MONITOR SAFE	do.	50
SAFE	do.	10

NATIONAL BANK SAFES,
With 2 Inside Burglars and 1 D and 2 M Locks.

OUTSIDE.			INSIDE.			
No.	Height.		Hei	Width.	Depth.	Price.
	In.		In.	In.	In.	
1	68		55	39	18	$1,200
2	61		48	39	18	1,050
3	57		42½	33	18	900

BANK VAULT BURGLAR SAFES,
With Folding Doors and D Lock.

0	68	53	27	64	43	20	$1,000
0½	61	53	27	55	46	20	800
1	57	47	27	49	40	20	600

BANK VAULT BURGLAR SAFES,
Single Doors and D Lock.

2	53	32	26	49	28	
	42	36	22	38	32	19
4	36	31	20	32	27	
5	30	24	18	26	20	14

BANK VAULT DOORS AND FRAMES,
D and S Lock.

No.	Height clear.	Width clear.	Depth adjustable.	Price.	Weight.
	In.	In.	In.		
1	72	27	20	$400	3,000
2	72	27	20	275	1,500

Orders received and filled at net cash prices, by the AMERICAN ADVERTISING AGENCY, 389 Broadway, New York. All Safes shipped from Troy free of cartage.

Business Depart., E. ALVORD. *Corresponding Depart.*, FOWLER AND WE

WEST'S IMPROVED PUMP.

Anti-Freezing, Double-Acting, Forcing, and Lifting

These Pumps have now been in general use a number of years, and give better satisfaction than any other, and are recommended as

THE BEST!

by CAPTAIN ERICSSON and other eminent engineers. We can refer to thousands using them, a guarantee that all will recommend them. They are more simple in construction, and work easie and cost less than all others.

"Our readers will find the double acting, improved pump of J. D. West & Co., one of the best in the market. It is very simple, works to a charm, so that any child may use it; throws a steady, continuous stream, and does not freeze in the coldest exposures, and is unusually cheap. We say this knowingly, and give the testimony of our own accord, without the knowledge or request of the proprietor"—*New York Evening Post, July 1st*, 1863.

"J. D. WEST & Co.: We are pleased to state that the Pumps we had of you about a year ago, have been in constant use, twelve hours each day, and raise for the use of our woolen factory, about 130 gallons per minute. They work with but little power, compared with pumps we have used before, and do not get out of repair, and are satisfactory in all respects.

"DUNLAP MANUFACTURING CO."

Solon Robinson to the Farmers' Club. Jan. 23.

"No farmer who owns a well or cistern can possibly afford to be without an iron pump. It should be a once a suction and force pump—a perfect little fire engine—such a one known as 'West's Improved Pump.' I speak of this Pump because I happen to know it....to be very simple, durable, powerful and cheap, and it don't freeze up, nor get out of order once a year....I know this, and think I may be doing the farmers good by speaking of it.....A boy ten years old can work it, and throw a continuous inch-and-a-quarter stream.....It can be made to work in deep wells as well as in shallow ones."

"GREAT NECK, L. I., 1860.

"I have used this Pump for one summer and winter, exposed to the northwest wind coming over Long Island Sound, being the coldest possible exposure, and at no time did it freeze, nor were we unable at any time to pump water with great ease.

H. B. MC ILVAIN."

"The undersigned having to use "West's Improved Pumps," cheerfully recommend them as simple, durable, and powerful in raising and throwing water, and for their ease of action, security against frost, and low price, we believe them superior to all others.

"WARREN LELAND, Met. Hotel, N. Y.
"J. W. POMEROY, Yonkers, N. Y.
"JOHN MESSEREAU, N. Y.
"DOMINICK LAWRENCE, Westchester."

From the New York Observer.

"We have had in use for months past one of West's Pumps, which has given us more satisfaction as a force and lifting pump than any we have ever used. It is one of great power, and well adapted for ship's decks, mines, factories, greenhouses, graperies, etc. *The Mining Chronicle and Railway Journal* says: 'It is recommended for its extreme simplicity of construction, great strength, and consequent durability and cheapness of repair. There is no stuffing-box—the pressure being held by a cup packing, like that upon the working-piston, working in a cylinder, fitted for the purpose within the upper air chamber—which we think a great improvement, as stuffing is so liable to be deranged and leak under strong pressure, to say nothing of the loss by friction incident thereto. It has also two air-chambers; thus the action of the valve is cushioned upon both sides by air—preventing water-hammer and vacuum-thump. The valves are very accessible and simply and cheaply repaired. They work much easier than any pump we have ever seen; the 4-inch cylinder being worked by children in wells 100 feet deep, and as they are extremely cheap, as well as simple and strong, we freely recommend them.'"

"CAMBRIDGE MINE, N. C., June 15, 1863.

"J. D. WEST & Co.—Gents: The Pump which I ordered for our mine is received, and put to work in our underlay shaft, which we are sinking. We find that one man will, with ease, lift 50 gallons per minute. We lifted in three and a half hours all the water in the shaft, which measures seven by twelve feet and thirty feet deep, and it was full when we commenced. It answers our expectations in every respect, and our workmen are highly pleased with it. It will do great service with but trifling expense for repairs.

"Yours, respectfully, BURR HIGGINS."

"This may certify, that I have been using, at my manufactory, for the last four years, 'West's Improved Pumps.' I now have in use three of said Pumps, one of which is kept constantly at work, 24 hours of each day (save Sundays), and has been running for the past two years. I pronounce them, unhesitatingly, the best Pumps that have been brought to my notice, having used many others previously. They are simple in their construction, and not easily disarranged.

"N. Y., Oct. 10, 1859. JAS. A. WEBB."

We have plenty more such certificates, but think these are enough. For Pumps, Hose, Pipe, etc., address or call upon

J. D. WEST & CO., 179 Broadway, New York.

Orders may be sent through the AMERICAN ADVERTISING AGENCY, 389 Broadway

AMALGAM BELLS,
AMALGAM BELLS,
AMALGAM BELLS,
AMALGAM BELLS

At prices within the reach of every Church, School, Cemetery, Factory, or Farm in the land. Their use throughout the United States and Canadas for the past six years has proven them to combine most valuable qualities. Among which are TONE, STRENGTH, SONOROUSNESS, and DURABILITY OF VIBRATION, unequalled by any other manufacture. Sizes from 15 to 5,000 lbs., costing TWO-THIRDS LESS than other metal, or 25 cents per pound, at which price I warrant them twelve months. Old bell metal taken in exchange, or bought for cash. Send for a circular to the manufacturer,

JOHN B. ROBINSON,
No. 86 DEY STREET, NEW YORK.

List of Academy, Steamboat, Fire-alarm, and Church Bells, with particulars as to Weight, Sizes, Price of Bells, Hangings, etc.

Weight of Bells.	Diameter.	Price of Bells without Hangings.	Price of Patent Hangings.	Price of Bell and Hangings complete.
225 lbs.	26 inches.	$56 00	$15 00	$71 00
275 "	42 "	69 00	18 00	87 00
375	35	94 00	22 00	116 00
450	94	112 00	25 00	137 00
600	02	150 00	30 00	180 00
750	39	188 00	35 00	225 00
1,000	64	250 00	42 00	292 00
1,200	48	300 00	45 00	345 00
1,400	50	350 00	50 00	400 00
1,600	52	400 00	54 00	454 00
1,800	55	450 00	60 00	510 00
2,000	58	500 00	62 00	562 00
2,500	60	625 00	72 00	697 00
3,000	68	750 00	85 00	835 00
3,500	66	875 00	87 00	962 00
4,000	69	1,000 00	100 00	1,100 00
4,500	72	1,125 00	113 00	1,238 00
5,000	75	1,250 00	125 00	1,375 00

List of Prices, Weights, and Sizes of Farm, Hotel, Steamboat, School-house, Shop, and Factory Bell.

These Bells are fitted with Yoke, Standard's Crank and Bolt, complete for use.

Weight of Bell and Hangings.	Diameter.	Cost of Bell and Hangings complete.
15 lbs.	7 inches.	$3 75
20	8¼	5 00
35	10	8 75
50	12	12 50
75	16	18 75
100	18	25 00
150	20	37 50
200	22	50 00
250	24	62 50

Larger Sizes made to Order at 25 cents per pound.

Guarantee.—All Bells sold at the above prices WARRANTED against breakage by fair ringing, for TWELVE MONTHS from time of purchasing. Should one fail, a new bell will be given by returning the broken one.

Orders may be sent through the AMERICAN ADVERTISING AGENCY, 389 Broadway, New York.

In case a Bell breaks after the expiration of the Warrantee, I allow HALF PRICE for the old metal. JOHN B. ROBINSON, 86 Dey Street, N. Y.

PRINCE'S METALLIC PAINT,

AN INDESTRUCTIBLE COATING FOR

IRON, TIN, and WOOD.

It consists of seventy-two parts Oxide of Iron, and twenty-eight parts Cement Lime Stone in the one hundred pounds.

It has much more body than red or white lead. It is warranted perfectly water and fire-proof and to withstand a greater heat on metals, without scaling, than any other paint in use.

It is a perfect cover for all kinds of iron, tin, or wood-work, out-houses, and canvas coverings. It prevents and arrests the corrosion of metals, and is not affected by the action of salt, gases, acids or ammonia.

It hardens under water, as has been fully demonstrated by its application to gas-holders, by many of the largest gas companies in the United States; which companies having thoroughly tested its properties as herein claimed, pronounce in its favor over any other paints in the market, even though sold at double its price.

As a coating for patterns of iron or wood, when mixed with shellac, it is much superior to beeswax, oil, or shellac alone, as has been proven at the large founderies in the country.

For patching boilers and making joints, it is considered superior to red lead, or any other preparation.

For cleaning metals it takes the place of crocus, rouge, and emery, being better and cheaper.

This Paint requires no more oil than dry lead or zinc, and much less than the ordinary mineral paints. It is free from any waste, and possesses a spreading and covering power unequaled.

Terms, by the Barrel or Half Barrel, Five Cents per Pound.

A liberal discount made to parties purchasing by the ton.

A Barrel or Ton will be forwarded to any gas companies desirous of testing its qualities, for which there will be no charge if it does not give entire satisfaction as being the cheapest and most durable of all other Paints in the market.

Also, Prince's Imperial Black Paint, and Prince's Protoxide of Iron.

DANIEL SLOAN, General Agent,
115 LIBERTY STREET, NEW YORK.

Local Agent—CALVIN GAY, 29 Doane st., Boston.

GEO. H. KITCHEN & CO.,

NEW PATENT

GAS APPARATUS

For Country Residences, Public Buildings, &c.,

FROM $300 UPWARDS.

EVERY DESCRIPTION OF GAS FIXTURES.

Gas Fitting in all its branches

561 Broadway,
NEW YORK.

SCHMIDLIN & DRISCOLL,

MANUFACTURERS OF

HALL, STREET & CHURCH LANTERNS,

Show Window and Street Lamp Reflectors,

135 Mercer Street,
NEW YORK.

S. FULTON & CO.,

(Successors to Colwell & Co.)

Manufacturers of

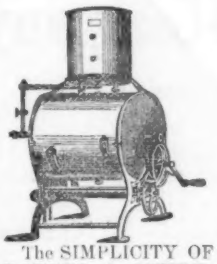
PIG IRON & CAST IRON GAS & WATER PIPES.

Also, Heavy & Light Castings of every description, No. 207 North Water street and 206 North Wharves, Philadelphia.

SAMUEL FULTON, THEO. TREWENDT

POOLE & HUNT,
BALTIMORE, MD.,
are prepared to execute orders for
GAS-HOLDERS,
IRON-ROOF FRAMING,
And all other descriptions of
Iron Work for Gas-Works, Water-Pipes, and Heavy Castings, and Machinery generally.

DRAKE'S
PATENT
AUTOMATIC GAS MACHINE.



THIS MACHINE, which has been in constant use for more than two years, is now acknowledged to be the

Most Convenient, Simple, and Efficient Method

OF LIGHTING BUILDINGS OF ALL KINDS, out of the reach of regular gas-works, ever brought to public notice.

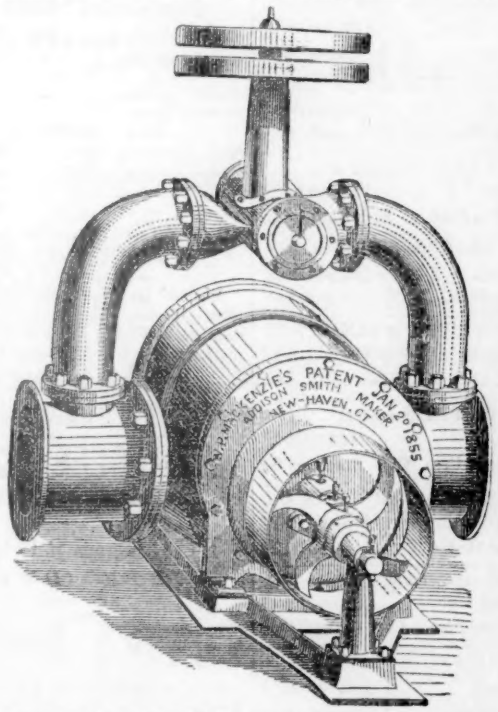
The SIMPLICITY OF THE APPARATUS, its ENTIRE FREEDOM FROM DANGER, the LITTLE ATTENTION REQUIRED, the EASE WITH WHICH IT IS MANAGED, and THE CHEAPNESS and SUPERIORITY OF THE LIGHT, has gained for it the favorable opinion of those acquainted with its merits.

The Machine takes up but little room; no disagreeable odor is experienced in its use; no fire is applied to the apparatus at all; it can be attached to ordinary gas-pipes used for coal-gas, and is burned through the same kind of fixtures.

These Machines are manufactured in Boston, by the AUTOMATIC GAS-MACHINE CO., and are for sale at their Store, 78 Washington Street, Boston, and also at the Agency, New York

For further particulars, address—

SMITH & SAYRE,
Sole Proprietors and Manufacturers of
THE MACKENZIE PATENT GAS EXHAUSTER AND COMPENSATOR.



They are made to pass from 4,000 to 150,000 cubic feet of gas per hour; will increase the tion and illuminating power of the gas, and add very much to the durability of the retorts, e clay or iron. The Compensator obviates entirely the necessity of water-joints, is compact, dur cleanly, not liable to get out of order, self-acting, quiet, and certain in its operation.

We are also sole proprietors and manufacturers of the

MACKENZIE PATENT BLOWER, PATENT CUPOLA AND SMELTING FURNACE.

The Blower is a Force Blast machine, durably built, and can be driven with one-third the p o e required to drive the ordinary Fan. The Cupolas are manufactured in sizes to melt from 1 ton to 20 tons per hour, will save one quarter of the time required by the old style Cupola, and 33 per cent. uel. Address SMITH & SAYRE, 458 Broadway, New York.

MORRIS, TASKER & CO,

PASCAL IRON WORKS,

[ESTABLISHED 1821,]

PHILADELPHIA,

Manufacture Wrought Iron Welded Tubes for Gas, Steam or Water; Lap-Welded Boiler Flues, GALVANIZED WROUGHT IRON TUBES,

ARTESIAN WELL PIPES,

of Wrought or Cast-Iron, screwed together, flush inside and out; Gas-works Castings, Retorts and Bench Castings for Coal Gas-works,; Cast-Iron Street Mains, Bends, Branches, Drips, &c.

Gas and Steam Fitters' Tools, &c.

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THOMAS S. TASKER,
CHAS. WHEELER,
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J. VAUGHAN MERRICK, W. H. MERRICK,
JOHN E. COPE.

SOUTHWARK FOUNDRY,

FIFTH & WASHINGTON STREETS,

PHILADELPHIA.

MERRICK & SONS, Engineers,

MANUFACTURERS OF EVERY DESCRIPTION OF GAS MACHINERY.

Retorts, Bench Castings, Condensers, Washers, Scrubbers, Wet or Dry Lime Purifiers, Coke Wagons, Fire Tools, Wrought Iron Grate Bars, Gas-holders, either Telescopic or Single, with Suspension Frames complete; Wrought Iron Roof Frames, for Iron or Slate; Stop Cocks, Exhausters, Steam Pumps, Boilers and Tanks, Steam or Hand Air Pumps for providing Street Mains, Centre Seals, Governors, Wrought or Cast-Iron Line Sleeves for Purifiers, Purifier Hoisting Machines, &c., &c.

Address— MERRICK & SONS,
5th and Washington Streets, Philadelphia

Petroleum Directory.

AMERICAN PETROLEUM CO.
10 Pine street. [$500,000.]
E. C. Clarke, Pres. Jas. Wadsworth, Sec.

BLOOD FARM PETROLEUM CO.
10 Pine street. [$5,000,000.]
C. Butler, Pres. G. H. Scribner, Sec.

COLUMBIA PETROLEUM CO.,
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B. Goe, Pres. E. Westervelt, Sec.

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Gold Company
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MINES on FISK LODE,
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In all, 8,625 feet (linear), and large water powers and mill sites
Capital issued, 40 000 shares, at $10 per share.
A limited number of shares are offered at the low SUBSCRIPTION PRICE (having been reserved for their customers), by

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SAFEST AND CHEAPEST SYSTEM OF INSURANCE.

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172 BROADWAY,
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CASH CAPITAL, - - - $400.000.
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Scrip Dividend, 1863, - - 60 per Cent.
Scrip Dividend, 1862, - - 60 per Cent.
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The Policies entitled to participate receive 75 per cent. of net Profits.

Insures Buildings, Merchandise, Furniture, Rents, Leases, against loss or damage by FIRE, and MARINE RISKS on LAKES, RIVERS and CANALS.

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CASH CAPITAL, $200,000. CHARTERED 1824.

The insured receive seventy-five per cent. of the net profits annually, without incurring any liability. When preferred, a discount will be made in lieu of participation in profits.

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JOSEPH LENNIG,
1615, 1617, and 1619 Francis St.,
Above Ridge Avenue, Philadelphia, Pa.,
MANUFACTURER OF
WET & DRY GAS METERS,
STATION, SHOW, & EXPERIMENTAL METERS,
Photometers, Pressure Registers, Indicators, and Gauges, Governors, Meter Provers, Centre Seals, Fluid Gauges, &c.
GAS APPARATUS
Of the most reliable and approved construction manufactured and on hand at the
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PUTNAM'S CLOTHES WRINGER.
IT IS THE ONLY RELIABLE
Self-Adjusting Wringer.

No Wood-work to Swell or Split. No Thumb-screws to get out of order. Warranted with or without Cog wheels.

It took the First Premium at Fifty-seven State and County Fairs in 1863, and nearly double that number in 1864, and is, without an exception, the *best* Wringer ever made. Patented in the United States, England, Canada, and Australia. Agents wanted in every town, and in all parts of the world. Energetic agents can make from $3 to $10 per day.

WHAT EVERYBODY KNOWS, VIZ.:
That Iron well galvanized *will not rust.*
That a *simple* machine is better than a complicated one.
That a Wringer should be *self-adjusting, durable, and efficient.*
That thumb-screws and fastenings cause *delay* and *trouble* to regulate and keep in order.
That wood soaked in water will *swell, shrink,* and *split.*
That wood-bearings for the shaft to run in *will wear out.*
That the Putnam Wringer, with or without cog-wheels, will *not tear the clothes.*
That cog-wheel regulators are not essential.
That the Putnam Wringer has *all* the advantages, and *not one* of the disadvantages above named.
That all who have tried it pronounce it the *best* Wringer ever made.
That it will wring a thread or a bed-quilt *without alteration.*

We might fill the paper with testimonials, but insert only a few to convince the skeptical, if such there be; and we say to all, *test* Putnam Wringer. Test it *thoroughly* with *any* and *all* others, and if not entirely satisfactory, return it

PUTNAM MANUFACTURING CO.—*Gentlemen:* I know from practical experience that iron well galvanized with zinc will not oxydize or rust one particle. The Putnam Wringer is as near perfect as possible, and I can cheerfully recommend it to be the best in use. Respectfully yours,
JOHN W. WHEELER, Cleveland, O.

Many years' experience in the galvanizing business enables me to indorse the above statement in *all particulars.*
JOHN C. LEFFERTS, No. 100 Beekman St.

NEW YORK, *January,* 1864.—We have tested Putnam's Clothes Wringer by practical working, and know that it will do. It is cheap; it is simple; it requires no room, whether at work or at rest; a child can operate it; it does its duty thoroughly; it saves time, and it saves wear and tear. We earnestly advise all who have *much* washing to do, with all intelligent persons who have *any,* to buy this Wringer. It will pay for itself in a year at most. HORACE GREELEY.

PRICES—$8, $9, and $10.
Sample Wringers sent, express paid, on receipt of price.
Manufactured and sold, wholesale and retail, by
PUTNAM MANUF'G CO.,
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STOCKS, BONDS,
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Bought & Sold.
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GENERAL
PURCHASING
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In Connection with all the Expresses,
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Established 1854.

Purchases to order ANY article wanted from New York, (or from Europe,) for ladies' or gentlemen's use or wear,—comfort or luxury—from a cameo to a cashmere—a sealring to a steam-engine.

Goods purchased at current City prices, and forwarded by Express, or as directed.

Commission, Five Per Cent.

Remittances, with orders, can be made by Express if preferred, as all Express Agents will take orders, receipt for and forward funds, and see to return of Goods.

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The Adams Express Company, appreciating the need of a capable medium connecting with the various Express Lines, through which personal and other orders for goods from this city, can be satisfactorily supplied, do recognize CARRINGTON & CO.'S GENERAL PURCHASING AGENCY as such a medium for filling orders for every description of goods wanted from New York, and commend it to the attention of the public, and of our general and local agents, recommending our agents to extend to it all reasonable aid, by facilitating the distribution of its cards and circulars, and making known the advantages it affords.

ADAMS EXPRESS CO.
By W. B. DINSMORE, Prest.
NEW YORK, June, 1864.

We cheerfully concur in the above recommendation of the Adams Express Company.
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By HENRY WELLS, Prest.
UNITED STATES EXPRESS COMPANY,
By D. N. BARNEY, Prest.
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NATIONAL EXPRESS COMPANY,
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HOPE EXPRESS COMPANY,
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NEW JERSEY EXPRESS COMPANY,
By GEORGE R. DUNN, Supt

The Greatest Improvement yet in the Sewing Machine Art!

A CURIOSITY WORTH SEEING!

Please send for circular with sample of sewing.

These Improved Machines save ONE HUNDRED PER CENT. of thread and silk, and make the LOCK-STITCH alike on both sides.
They require no instruction to operate perfectly, except "the printed directions."
No change in sewing from one kind of goods to another.
And no taking apart to clean or oil.
Our NEW MANUFACTORY is now complete, with all its machinery and tools entirely new, and is already rapidly turning out Machines which for BEAUTY and PERFECTION of FINISH are not surpassed by any manufacture in the world.
N. B.—Should any Machine prove unsatisfactory, it can be returned and money refunded.
Agents wanted in counties not canvassed by our own agents.

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Mercury Cups, Portable Sockets, Burner Pillars, Burner Pliers, &c., &c.

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For Lighting and Heating Purposes.
Gas Heating and Cooking Apparatus; Fitters' Proving Apparatus, &c.
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PROTECTED WROUGHT-IRON WATER & GAS PIPE.

HYDRAULIC CEMENT SEWER PIPE,
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Sewer Pipes extensively used in Brooklyn, and now introduced in New York, Jersey City, Newark, Hartford, Albany, and other localities, from 8 to 24 inches in calibre.
Water Pipes, lined and coated with Cement mortar, ready for laying and back filling, and can be tapped like cast-iron pipes, which they excel in durability, discharge, and economy.
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NON-FREEZING & NON-EVAPORATING FLUID,
For Filling Wet Gas-meters,
AND
For Cheaper than any other Meter-fluid in use.
WARRANTED
Not to corrode tin, iron, brass, zinc, or drum-metal.
To be less injurious to wet meters that water.
Not to freeze at 20 degrees below zero, Fah.
Not to evaporate when in use in the meters. meters once filled with it requiring no further attention whatever for years.
The summer is the proper time to fill them.
SIX YEARS OF SUCCESS!
Five years in general use in works using it, to the exclusion of all other fluid, and driving the dry meter out of use, enables us to recommend our patent with perfect confidence.
For information and references, apply to
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Guaranteed to effect a great saving in fuel and give the most perfect regularity of power. For sale by the subscribers, who have established their exclusive right to manufacture damper regulators, using diaphragms of flexible vessels of any kind. Clark's Patent Steam and Fire Regulator Company, No. 5 Park Place, New York.

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CAST-IRON PIPE, RETORTS, &c.
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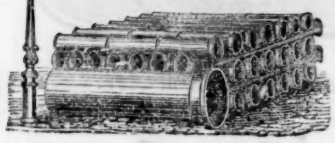

THE AUBIN GAS-WORKS COMPANY,
Of Albany, N. Y.,

Now contract their works to make 10,000 feet of good Gas from 2,000 pounds of *hard* wood and 40 gallons of kerosene tar, *before payment can be demanded;* and the charcoal is worth the cost of the wood.
Many Village Gas Companies can be referred to.

D. PARRISH, Jr.,
GAS ENGINEER
And Contractor for Coal or Oil Gas-Works.
Estimates given for Gas-Works, Gas-Holders, or any Gas Apparatus.
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To Manufacturers of Petroleum Gas.
For sale, Parrish's Patent Gas and Air Mixer, adapted to all works using Petroleum or other oils, by which rich Petroleum Gas is mixed, after it leaves the holder, with a proper proportion of air, giving it the greatest illuminating power, without smoke, through any burners. The apparatus being attached to the outlet pipe, requires no alteration of the works.
Apply at the Gas-Works of St. Nicholas Hotel, No. 63 Mercer st., N. Y., where one can be seen in operation; or address D. Parrish, Jr., St. Nicholas Hotel, New York city, or No. 1416 Arch street, Philadelphia.

GLYCERINE
FOR
Filling Wet Gas-Meters
Cheaper than Whisky Or any OTHER SUBSTANCE,

We have furnished the Cincinnati Gas and oke Company 300 barrels Glycerin, for filling their wet meters, and are now ready to supply other Gas Companies at the lowest cash prices.
We warrant our Glycerin not to corrode the meter metal, nor to freeze at the lowest ordinary temperature, nor to evaporate.
HARTMAN & LAIST,
Manufacturing Chemists,
Cincinnati, O.
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Great Improvement
IN
Sewing Machines.
EMPIRE
SHUTTLE MACHINE!
Patented February 14th, 1860.
Salesroom, 536 Broadway.

This Machine is constructed on entirely new principles of mechanism, possessing many rare and valuable improvements, having been examined by the most profound experts, and pronounced to be SIMPLICITY and PERFECTION COMBINED.
It has a straight needle, perpendicular action, makes the LOCK or SHUTTLE STITCH, which will NEITHER RIP nor RAVEL, and is alike on both sides; performs perfect sewing on every description of material, from Leather o the finest Nansook Muslin, with cotton, linen, or silk thread, from the coarsest to the finest numbert.
Having neither CAM nor COG WHEEL, and the least possible friction, it runs as smooth as glass, and is
Emphatically a Noiseless Machine!

PRICE OF MACHINES,
COMPLETE:
No. 1, Family Machine, with Hemmer, Feller, Gauge, Braider, & Corder, complete. - - - $60
No. 2. Small Manufacturing, with Extension Table, $75
No. 3. Large Manufacturing, with Extension Table, $85
No 3. Large Manufacturing, for Leather, with Rolling Foot and Oil Cup, 100

One-half hour's instructions is sufficient to enable any person to work this Machine to their entire satisfaction.

Agents Wanted in all Towns in the United States, where Agents are not already established. Also, for Cuba, Mexico, Central and South America, to whom a liberal discount will be given Terms, invariably Cash on delivery.
T. J. McARTHUR & CO.,
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Conically Slotted Solid Wood Sieves
FOR GAS PURIFIERS.

The Conically Slotted Solid Wood Tray or sieve was patented 21st October, 1862, and all persons are cautioned against purchasing them of any other person except the subscriber. The following companies are now using these trays.
Manhattan, New York,
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NEW YORK FIRE-BRICK and Clay Retort Works. (Branch Works at Kreischerville, Staten Island.)
B. KREISCHER, office 56 Goerck street, corner Delancy street, New York.
Gas Retorts, Tiles and Fire-Brick of all shapes and sizes. Fire Mortar, Clay, and Sand. Articles of every description made to order at the shortest notice. B. KREISCHER.

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JOHN NEWKUMET,
Manufacturer of all kinds of Fire-Brick, Gas-House Tiles, to suit all the different plans in use. Clay Retorts and Dentists' Muffles. Orders filled at short notic

WEST'S IMPROVED PUMPS, the most Simple, Durable, and Powerful, and the Cheapest in use.
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WORTHINGTON'S Steam Pumps, extensively used by Gas-Light Companies. For Sale at greatly Reduced Prices.
Also, a new and highly successful Pump, driven by water pressure, requiring no attention or repairs, and the most economical water motor yet constructed.
Patent GATES, for Water and Steam-stops.
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WILCOX & GIBBS SEWING MACHINE
It is entirely noiseless.
A patented device prevents it being turned backward.
The needle cannot be set wrong.
It received the Gold Medal of the American stitute in 1863.
InSend for a circular containing full information, notices from the press, testimonials from those using the machine, &c.
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TO GAS COMPANIES.
THE UNDERSIGNED DESIRES TO undertake the supervision of several small Gas-works, to visit and examine them as often as may be necessary; to obtain and inspect their coal, castings, fire-brick, and other materials; and to manage their general business in such a manner that they shall be under such supervision as is now attainable in large works, at much increased cost. Also, to advise as general Consulting Engineer and expert in practical chemistry.
CHAS. M. CRESSON,
Late Asst. Engineer of the Philadelphia Gas-works
417 Walnut st., Philadelphia.

DON'T FAIL TO READ THIS!

COFFEE
COFFEE! COFFEE!
EAST INDIA COFFEE CO.
154 Reade St.,
(Three doors from Greenwich St.,) NEW YORK,
Call universal attention to their
KENT'S
☞ **East India Coffee,**

KENT'S EAST INDIA COFFEE
Has all the flavor of OLD GOVERNMENT JAVA, and is but half the price; and also that

KENT'S EAST INDIA COFFEE
has twice the strength of Java, or any other Coffee whatever and wherever used by our first-class hotels and steamboats—the stewards say there is a saving of 50 per cent.

KENT'S EAST INDIA COFFEE
is the most healthy beverage known, and is very nutritious. The weak and infirm may use it at all times with impunity. The wife of the Rev. W. Eaves, local minister of the M. E. Church, Jersey City, who has not been able to use any coffee for fifteen years, can use

KENT'S EAST INDIA COFFEE
three times a day without injury, it being entirely free from those properties that produce a nervous excitement.

Dr. JAMES BOYLE, of 156 CHAMBERS ST., says: "I have never known any Coffee so healthful, nutritious, and free from all injurious qualities as

KENT'S EAST INDIA COFFEE.
I advise my patients to drink it universally, even those to whom I have hitherto prohibited the use of Coffee.
The PRINCIPAL OF THE NEW YORK EYE INFIRMARY says: "I direct all the patients of our Institution to use, exclusively,

KENT'S EAST INDIA COFFEE,
and would not be without it on any account.

The Rev. C. LARUE, an eminent clergyman of the M. E. Church, now stationed at Halsey street, Newark, says of

KENT'S EAST INDIA COFFEE,
"I have used it nearly a year in my family, and find it produces no ache of the head or nervous irritation, as in the case of all other Coffees. It is exceedingly pleasant, and I cordially recommend it to all clergymen and their families."

KENT'S EAST INDIA COFFEE
is used daily by the families of Bishop Ames, Bishop Baker, Bishop James, and many of the most distinguished clergymen and professional men in the country."

Beware of Counterfeits!
and be sure that packages are labeled
KENT'S EAST INDIA COFFEE,
154 Reade Street, New York,
as there are numerous counterfeits afloat under the name of "Genuine East India Coffee," "Original East India Coffee," etc. put forth by imposters to deceive the unwary.

In 1 lb. packages, and in boxes of 36, 60, and 100 lbs, for Grocers and large Consumers. Sold by Grocers *generally.*

Orders from Country Grocers solicited, to whom a very liberal discount will be made.

Wholesale Agents: Hoeflish & Molan, and W. J. Heiss & Bro., Philadelphia; Francis H. Perry Providence; A. L. Waite & Co., Boston; Pynchon & Lee, Springfield, Mass.; S. N. Callender, Buffalo; Gordon McMillan & Co., Cleveland; A. A. Colter & Co., Cincinnati; J. & J. W. Bunn, Springfield, Ill.; H. B. Shields, Corydon. Ind.; and C. C. Garber, Chicago.
The Am. Adv. Agency, 308 Broadway, N. Y., will receive orders for the above named Coffee.

Business Dep., E. ALVORD. | *Corresp. Dep.,* FOWL & WELLS.

Glycerin for Gas Meters.

This article is superior to any fluid ever before used for Wet Meters, and we cannot better set forth its advantages than by giving the following letter from the Superintendent of the Covington Gas Co. The superiority of our Glycerin over all others in the market, for this purpose, is admitted by every Company that has used it. We have sold, the past winter, to the Cincinnati Gas-Light and Coke Co.; to the Gas Companies of Covington, Ky.; Dayton, Springfield, Portsmouth, Urbana, and Piqua, Ohio Richmond, Ind., and Buffalo, N. Y, to whom we refer.

Glycerin is much cheaper than Whisky is now, or likely to be areafter, and not evaporating, greatly increases the economy of its use.

OFFICE OF THE COVINGTON GAS-LIGHT CO.
COVINGTON, KY., Feb. 18, 1864.

MESSRS. W. J. M. GORDON & CO.:

Dear Sirs,—It affords us great pleasure in testifying to the superiority of the Glycerin Fluid purchased from you for filling the Wet Meters now in use by the Covington Gas-Light Company.

The difficulty of finding a non-evaporating and anti-freezing mixture for Wet Meters, has, in my opinion, been overcome by the use of your Glycerin Fluid.

I have had it in constant use for the past four months, and during that period the thermometer has ranged as low as 14o below zero, and after careful examination, I have found the fluid in the same condition as when first put in the Meters, and without the slightest discoloration.

Its non-evaporating quality does away with the hitherto unavoidable expense of filling the Meters monthly, and renders Wet Meters no longer objectionable.

In fact, I can cheerfully recommend it as being cheaper and better than any other Fluid or Mixture now in use.

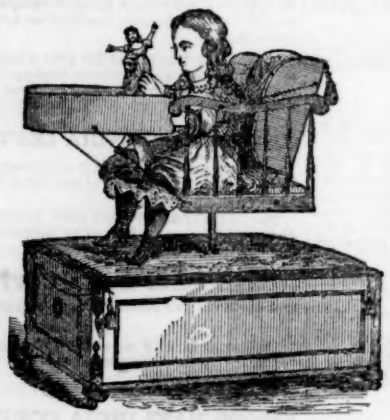
Very respectfully,
S. S. STRATTON, *Sup't Cov. Gas Co.*

We have been engaged in Manufacturing Glycerin the past six years, and from our advantage in material and the large amount we make, are enabled to offer it lower than any manufacturer in this country. We will be pleased to quote prices or to give further information.

W. J. M. GORDON & BRO.,
MANUFACTURING
CHEMISTS & DRUGGISTS,
N. E. Cor. Central Avenue & Eighth St.,
Laboratory, Miami Canal, bet. Third & Fifth Sts.,
CINCINNATI, O.

BROWN'S

PATENT BABY TENDER.



THE BABY-TENDER.

Is the most complete and useful Nusery Invention of the age. From a charming Spring Cradle, it is easily and almost instantly converted into either of the following articles namely:

A Reclining Couch, for children to young to sit alone.
A Spring Chair.
A Baby Walker, attractive and useful.
An Ottoman, for the parlor or dining room.
A Hobby-Horse, for children under five years.
A Baby-Jumper, for security, exercise and amusement. (See cut)
A Baby-Horse, or, when elevated,
A High Chair, for the table.
A Nursery Chair.

The motion of the Baby-Tender, which is vertical and noiseless, is derived from a Spiral Spring in the Ottoman; and, unlike that of the common Rocking or Swinging Cradle, is in the highest degree healthy, delightful and soothing. It relieves the mother from the hardest part of baby-tending.

Prices from $25 to $50.

AGENTS WANTED.

Terms cash.

When packed the Baby Tender alone measures seven cubic feet, and weighs about one hundred pounds. The horse adds about one-fourth to the weight and measurement.

☞Send for Descriptive Catalogues.

BABY-TENDER MANUFACTURING COMPANY.
939 Broadway, N. Y.

Gas Fixtures and House Furnishing
GOODS.

E. V. HAUGHWOUT & CO.,

No.'s 488, 490 and 492 Broadway,

Corner of Broome street, New York,

Manufacturers and dealers in

Chandeliers and Gas Fixtures.

Have a large and very choice asssortment of GAS FIXTURES, which they offer at reduced prices, in view of the recent fall in gold. Their

Glass and Fire Gilt Chandeliers, are of entirely new designs,

And well worthy of attention by those who wish to purchase

☞ *Fine Fixtures for their Houses.*

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OFFICE OF WM. DAVIDSON,
INSPECTOR OF GAS METERS FOR THE STATE OF NEW YORK,
☞At the above address. 127

WATER AND GAS PIPE.

The Boston Bituminized Pipe Company,

Are now manufacturing and prepared to take orders, for their PATENT PIPE, (from 2 to 12 inches in diamter,) as a substitute for Iron, Copper, Lead, &c., for the conveyance of WATER, GAS, SEWERAGE, &c. &c.

From the testimonials received, and the entire satisfaction it has given those having it in use, we feel warranted in claiming for this pipe over that of any other, the following advantages, viz:

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As a GAS PIPE, we say it has no superior. The Lowell Gas Light Co., purchased and laid some of this Pipe last year, and have likewise subjected samples to a test of four month's duration in their dry lime purifiers, with the most satisfactory results, in fact establishing beyond a doubt, its perfect adaptation to the wants and requirements of Gas Companies, specimens of which, together with the statement of O. E. Cushing, Esq., Agent Lowell Gas Light Co., who made these experiments. I shall be pleased to show, and give all other needed information, by applying in person, or by letter, to JOHN L. WEBSTER, Treas.,

Boston Bituminized Pipe Co.,
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129 Address American Gas Light Journal.

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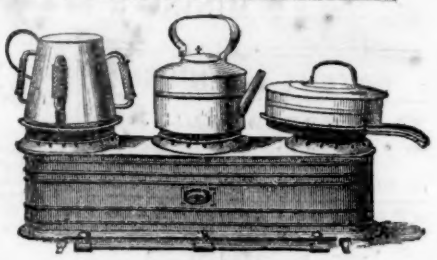
Address, JAMES R. SMEDBERG,
131 186 Seventh Avenue, New York City.



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Will BOIL, BROIL, ROAST, BAKE, TOAST,

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☞The Company have descriptive Catalogues, which will be sent or delivered, upon application for them.

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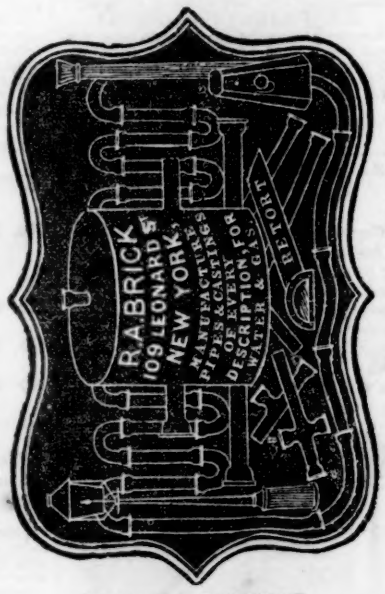

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